Energy Savings in Urban Quarters
through Rehabilitation and
New Ways of Energy Supply

MANUAL OF ENERGY-EFFICIENT URBAN DEVELOPMENT

CENTRAL EUROPE
COOPERATING FOR SUCCESS.

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Imprint

Manual of Energy-Efficient Urban Development

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Introduction

The involvement of the concerned stakeholders such as energy providers, municipalities, owners, housing companies but also residents were identified as a crucial part for the success of the project.

Project background

Against the background of the negative impact of climate change and rising energy prices, 13 Partners from Germany, Hungary, Italy, Poland and Slovenia are cooperating on innovative solutions to reduce the energy consumption in their cities and regions. Energy-efficient urban infrastructures (buildings and traffic) offer prior solutions in the field of energy-efficient urban development - besides raising the share of renewable energy production.

The project takes as its starting point the assumption that energy waste, CO2 emissions and air pollution in European cities are largely due to the old building stock and inefficient heating systems. The EnSURE project focuses on an implementation-oriented approach with visible measures. These aspects are of prior importance: development of integrated energy concepts for urban areas, establishment of implementation structures such as participation processes and financing instruments to stimulate investment in these domains. A key role is played by the following implementation measures: the energy-efficient rehabilitation of buildings and new methods of energy supply including the use of renewable energies.

While several municipalities have had initial experience of energy-efficient building refurbishment measures, the topic of improving the environment of residential quarters and business districts on the basis of urban energy concepts is still rather new in the partner states and needs to be promoted. Integrated energy concepts which increase the energetic and economic efficiency of rehabilitation projects, and which are embedded in integrated urban development concepts, are hardly applied in Central Europe. Thus EnSURE's strategy focuses not on single operations spread all over the city area, but rather on concepts carried out in the context of a long-term, integrated urban energy development strategy for the individual urban quarter or the district level. The EnSURE pilot projects consist of an optimised complex package of refurbishment measures, new concepts for energy-efficient district planning, heat energy supply and the use of renewable energies. As experience among the regions in Central Europe widely differs, transnational cooperation is highly valuable for exchanging knowledge, fostering common learning, transferring experience for wise application and gaining a high surplus compared to single efforts.

The EnSURE project is co-financed by the Central Europe Programme. It is a European Union programme that encourages cooperation among the countries of Central Europe to improve innovation, accessibility and the environment and to enhance the competitiveness and attractiveness of their cities and regions. Thus the project's activities contribute to the EU policies and goals of reduced energy waste and climate protection. The European Union is committed to reducing its overall emissions by at least 20% below 1990 levels by 2020. Local authorities play a key role in the achievement of the EU's energy and climate objectives. The Covenant of Mayors is a European initiative by which towns, cities and regions voluntarily commit to reducing their CO2 emissions beyond this 20% target. This formal commitment is to be achieved through the implementation of Sustainable Energy Action Plans (SEAPs).

The prerequisite of the SEAP is a Baseline Emission Inventory (BEI). It provides knowledge of the nature of the entities emitting CO2 on the municipality's territory and will thus help select the appropriate actions. Inventories conducted in later years will make it possible to determine if the actions provide sufficient CO2 reductions and if further actions are necessary.

The SEAP is a key document that shows how the Covenant Signatory will reach its commitment by 2020. It uses the results of the BEI to identify the best fields of action and opportunities for reaching the local authority's CO2 reduction target. It defines concrete reduction measures, together with time frames and assigned responsibilities, which translate the long-term strategy into action. Signatories commit themselves to submitting their SEAPs in the year after joining the project.

Technological changes and the availability of new products combined with new laws and rules create a favorable context for energy efficiency related decisions.

Strategic Approach of Integrated Energy-Efficient Urban Development

Within the scope of the EnSURE project integrated means a holistic and implementation-oriented approach aiming at the rehabilitation of the building stock, the renewal of the energy supply system and infrastructure, and raising the share of renewable energies on the district level. But energy issues are not only considered in their technical dimensions. Instead the project rather aims at a process-oriented implementation of energy-efficient urban regeneration involving relevant local stakeholders. Especially under economically difficult conditions, it is important to initiate new local and regional co-operations to foster the successful realisation of energy-efficient and energy saving measures. Therefore, public awareness strategies and the establishment of a participatory process are crucial for the successful implementation of measures within the EnSURE project.

13 Partners from Germany, Hungary, Italy, Poland and Slovenia are cooperating for innovative solutions to reduce the energy consumption in their cities and regions.

Integrated approaches to energy-efficient urban development are an essential part of the effective energy-efficiency policy at local and regional levels. They can only be realised in a cross-sectoral, interdisciplinary and participative process. This approach is also reflected in the heterogenous EnSURE partnership, in which various institutions cooperate on the topic of energy-efficient urban development.

Institutional background of the EnSURE partnership

Local authorities	City of Ludwigsburg / Lead Partner (DE) City of Faenza (IT) Municipality of Sopot (PL)
Regional development agencies	Development Agency GAL Genoa (IT) SIPRO Development Agency Ferrara (IT) Business Support Centre Kranj (SI)
Research institutions	Budapest University of Technology and Economics (HU) Hungarian Urban Knowledge Centre (HU) Eastern-Hungarian European Initiations Foundation (HU) Agenda 21 Consulting (IT)
Regional finance institution	Finlombarda S.p.A. (IT)
Residential building cooperative	RSM „Praga" Warsaw (PL)
Non-governmental organization	Förderverein Bundesstiftung Baukultur e.V. (DE)

The basis of the development process is the joint elaboration of integrated concepts for energy related urban regeneration based on a thorough analysis of the physical and socio-economic situation of the urban area. Action on energy efficiency will only produce all its potential gains, if operations to be undertaken at community and national levels are reflected locally. Local authorities play an important role by providing and promoting sustainable construction in particular in relation to energy-efficient buildings. But also private property owners have to be activated to invest in the energy-efficient rehabilitation of their buildings and the use of renewable energies. Besides providing technical support, financial means should foster private investments. Energy-saving and cost-efficiency are crucial and convincing arguments for users. Thus financial instruments and funding opportunities were analysed on European, national and regional levels to finance the implementation of measures of elaborated urban energy concepts. EnSURE aims at the targeted development and promotion of appropriate financing concepts that lead to the improved affordability of investments in the energy efficiency of the building stock and sustainable energy supply.

Why a Manual?

The EnSURE project is based on the hypothesis that in many European countries city-level energy management has not yet become a developed, professional practice, which can be a barrier to energy-efficient urban planning. Therefore the three-year project can be considered groundbreaking on a European level. It did not only provide the theoretical background and methodological concept, but it also compiled a useful guide for settlements based on real-life best practices, for the purpose of successful progress towards more energy-efficient regional and urban planning in as many European cities as possible. The work invested in the project resulted in several core outputs, of which the manual is an easy-to-read document, summarizing the processes of energy-efficient urban development for those who do not have experience in that field. Regardless of whether they are planners, decision-developers, politicians or state officials, hopefully the manual will assist them to learn how to organise strategic planning in terms of work, actors to be involved, steps to be taken and content to work on.

Based on practical experience, the manual points out a number of central fields of activity and important content elements which bring readers closer to their own success. The manual aims to be a practical guide for readers who are active in the field of energy-efficient urban planning.

1. Policy Recommendations

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For the Decision-Makers and Decision-Developers of the European Commission

1. Energy-efficient urban planning for settlements can only be widely recognised and considered to be an important activity if energy-related investments prove to be profitable in the short term. This requires the definition of energetic objectives for buildings, which also make short-term building refurbishment investments profitable. The remaining communal resources should be invested in research and development, aiming at the more economic application of renewable energy sources.

2. In many European countries, the methods of energy-efficient urban planning are not yet familiar to local politicians in charge of urban planning. Therefore it is reasonable that in the next planning period, only regional and local municipalities with an appropriate local strategy (e.g. SEAP) are provided with financial support and resources to achieve their objectives defined in their strategy.

3. Considering that carefully planned energy-efficient urban planning creates profitable investments, it is reasonable that funding in the following period should be reimbursable to a greater extent, increasing the variety of revolving funds (e.g. ELENA and JESSICA). The role of private investors (e.g. ESCos) should be a priority.

4. Applying reimbursable funding tools often requires the activity of national governments, for instance by creating national or regional funds. Considering that these are often indispensable in order to realise multi-level energy-efficient planning and development, it is reasonable that those national governments who do not provide municipalities with the possibility to acquire community resources, or the development and publication of the necessary databases, should not be beneficiaries of communal funding targeting energy efficiency.

For National, Federal and Federal State Governments

5. Energy-efficient development can only be accomplished if it follows the system of multilevel-marketing, interweaving the planning of energy-efficient methods, costs and returns on a national, regional and local level. In order to achieve that, it is indispensable that the methods of regional and urban planning are defined in national norms and measures. At the same time existing and consolidated tools such as Strategic Environmental Assessment and Environmental Impact Assessment should include energy issues.

6. National governments are in charge of facilitating energy-efficient urban planning by assisting regional and local municipalities. In order to do so, it is indispensable to create the conditions for acquiring European Community resources and funds.

7. In order to realise energy-efficient development and save public money, it is essential that such European, national or regional funds can only be acquired by local municipalities which have previously developed strategy tools for energy efficiency (e.g. SEAP) or other consolidated tools for environmental management (e.g. EMAS). Among these funds, reimbursable financing has to be prioritized, as it creates resources for further reimbursable funding.

8. Adequate strategic plans can only be prepared based on valid and relevant data. Preparing local and regional strategies for energy and resource efficiency relies on data (for example local energy consumption) from the public and private sector on a settlement level. Therefore national governments are in charge of collecting and disseminating settlement-level data on an annual basis.

9. Energy-efficient urban planning requires governmental bodies to raise awareness among local municipalities. This has to include collating and disseminating methods, mirroring national specificities, regularly assessing such developments and monitoring energy-efficient urban planning on a national level.

10. Considering that energy-efficient urban planning is a multiplayer process, it is essential for national governments to emphasize the importance of investment by municipalities in order to raise and maintain interest in the issue.

For Regional Governments

11. Similar to settlements, regional municipalities have a key role in energy-efficient spatial planning: beyond ensuring the energy efficiency of infrastructure networks and public buildings, they have an essential role in assisting smaller municipalities to take part in the region's energy efficiency activities. Such activities are programmes established for local public institutions, third-party agreements covering the entire area, or a significant part thereof, or acquiring sources from tenders dealing with energy efficiency.

12. Similar to local municipalities, regional municipalities ought to define their tasks related to energy-efficient spatial development based on a sustainable energy programme (SEAP).

For Local Municipalities

13. Local municipalities play an important role in sustainable development and one of their key issues is energy-efficient urban development.

14. Energy-efficient urban development should be based on the Covenant of Mayors' sustainable action plan, tackling climate change and bringing economic savings for those who manage energy strategies.

15. The basis for sustainable and efficient action plans are reliable data. Consequently, the municipality has to be up-to-date with the energy consumption of its own institutions, establishments and vehicles as well as the settlement's energy consumption affairs in order to increase the institution network's energy efficiency.

16. Energy-efficient urban development requires cross-departmental thinking that overarches different sectors; therefore planning and realisation should be based on widespread participation.

17. Municipalities have to influence energy management in the entire settlement with investment and other methods (e.g. communication, event marketing, Info Points etc.).

18. While developing energy-efficient urban planning, investment solutions should be prioritized which improve energy efficiency and contribute to the settlement's climate and energy efficiency with less than ten years of rate of return. Investments with more than ten years of rate of return, even if important and necessary, should be carefully assessed.

19. Energy efficiency on a city level is a question of awareness and technical background: increasing the awareness of actors and targeted communication are an important part of investments for municipalities.

2.
Beyond Energy Efficiency: the Importance of Baukultur while Creating a Sustainable and High-Quality Urban Environment

The integrated development concept in Ludwigsburg.

A quality and sustainable built environment is of great importance for the social and economic present and future of our countries. It is part of the society`s cultural heritage and enriches the everyday-quality of life for its citizens.

The importance of Baukultur

A high-quality and sustainable built environment is of great importance for the social and economic present and future of our countries. It is part of our society's cultural heritage and enriches the everyday quality of life for its citizens.

The quality of our built environment is determined by interacting aesthetic, functional, technical, socio-cultural, economic and ecological factors. Planning for sustainable buildings and urban quarters with a high quality of living thus requires integrated perspectives and concepts that look beyond energy performance requirements.

Ensure high quality outcomes and sustainability

A holistic approach and an appreciation of the interplay between disciplines are needed. The various factors and multiple interests have to be considered in a balanced way, whilst allowing for cross-sectoral thinking and action.

Find the right solution

When planning for urban energy retrofits, each individual situation, place and building requires differentiated solutions according to the context. The measures and options that are considered appropriate in the given context must be carefully checked and weighted. This involves exploring the balance between the existing potentials in terms of "Baukultur" and the energy performance and climate protection requirements.

Conducting a comprehensive analysis of the current and future potentials and needs at the regional, urban quarter and building levels is a precondition for identifying optimal solutions. Decisions and measures taken at regional, municipal and local levels need to be planned and implemented in a coordinated manner to exploit synergies. This entails that any measure at the district level – such as the energy-efficient refurbishment of residential buildings – should be embedded in integrated development concepts.

Employ a coordinated approach and develop integrated concepts

Broadening the focus from single measures to planning and development at a district level allows for holistic concepts. Positive results and sustainable success in terms of technological and urban development will thus be achieved. A better coordinated integration of regenerative energy technologies and the systematic development of energy supply systems in the urban area facilitate the appropriate choice and dimensioning of HVAC systems for individual buildings and are preconditions for a sustainable development of the urban quarter. Local energy supply systems may be operated more efficiently when more buildings are linked to a network.

Shift from considering the energy balance for each single building to the energy balance for the entire urban quarter!

The consideration of the entire urban quarter makes it possible to balance the higher energy consumption of specific buildings against achieved energy savings of neighbouring highly energy-efficient buildings. The concept of solidarity offers scope for a sensitive rehabilitation of historic and other buildings of particular value, where the works carried out may need to be limited to minimum measures to preserve the special architectural and historic interest of those buildings.

Create vibrant cities by strengthening identity

A climate-friendly and high-quality urban design, civil engineering and architecture result in vital building blocks that contribute positively to the character of the urban quarter and allow for improved living standards for residents as well as an overall enhancement of the built environment. The specific design and characteristics of buildings, open spaces, squares and streetscapes contribute to the identity of a neighbourhood and the collective memory of an urban quarter. Baukultur provides information about society, urban spatial structure, construction concepts, and the prevailing design and concepts of previous periods of history. It enables emotional attachment, and fosters regional diversity and territorial cohesion.

Timber frame house, Neuendorf, Quedlinburg, year of construction 1670, rehabilitation 2008/2009.

The careful selection of appropriate energy-efficient retrofit measures and the consideration of any likely impact upon the quality of the building and its urban neighbourhood is necessary to ensure a sustainable, high-quality built environment. Energetic renewal should never take place at the expense of irreplaceable cultural assets. Practices of climate change adaption of buildings and neighbourhoods must always strive to preserve and enhance the unique character of the built environment.

Conducting an energy-efficient housing rehabilitation, for example, should be coupled with the modification of facilities and spaces to meet the needs of its residents: Measures may thereby enhance functional quality, comfort and flexibility. Any likely potential for upgrading the surrounding area and strengthening the urban characteristics should be considered. Rehabilitation measures, which bring changes to the building's external aesthetic, have to result in an improved appearance of the building itself and the surrounding area.

Lausitztower, Hoyerswerda, rehabilitation: 2003/2007.

Strive for resource-saving architecture, civil engineering and urban planning

Planning a climate friendly and high quality urban design involves integrated concepts, thereby placing the planning and layout of cities and buildings on a new ecological footing. The major objective is to reduce the amount of energy, material and land use and to make urban areas producers rather than consumers of energy. Increasing mixed and balanced urban density contributes to creating cohesive communities (Manifesto, 2010).

Principles of energy conservation and efficiency, and a commitment to the conscious use of resources are at the core of many contemporary design and construction practices. Resource-saving architecture and civil engineering strongly focuses on the utilization of renewable energies and resources and involves employing natural systems and processes rather than energy-intensive technology.

Striving for sustainability requires treating an ecological building as an integrated whole, taking its planning, building materials, production, transport,

Link regional building traditions with pioneering ideas and develop new forms of architecture and civil engineering, which fit into the local environment and the existing building stock.

construction, occupancy, adaptive reuse and recycling into account. Regarding the life-cycle energy balance of buildings, particular attention is also to be paid to maintaining existing constructions. This acknowledges the embodied energy and resources in the building materials used for their construction. When planning energy efficiency projects, the wide range of available solutions and techniques must be considered, e.g. standard wall insulation needs to be recognised as only one option to improve energy efficiency.

As planning high quality, sustainable building rehabilitation involves complex considerations, clients, property owners and investors must be encouraged to seek professional guidance. Planners are able to combine energy efficiency and technical know-how with good architecture and design. A particular focus is on "linking regional building traditions with pioneering ideas in the development of new forms of architecture and civil engineering", which fit into the local environment whilst providing "recognisable indications of the change in our society's attitude" (Manifesto, 2010).

Assess and be honest

When assessing energy efficiency measures, various factors such as environmental, ecological, economic, social and cultural perspectives etc. need to be considered. This also involves a greater use of the life-cycle considerations of a product, building or urban quarter.

As the selection of rehabilitation measures is often based on estimated and prognostic data, such as potential energy savings, research on and analysis of current practices are recommended. Monitoring and evaluation will allow reliable data to be generated to judge the true effectiveness of a particular practice. Reliable findings serve as a basis for the future use, improvement, transferability and greater spread of effective measures.

Connect ideas to maximise impact

In view of the complexity of sustainable urban development and building rehabilitation, it is important to foster development and high quality consultation. Promoting experiments, research and pilot projects contributes to the development and improvement of (new) techniques, materials and processes. Access to high quality consultation must therefore be provided.

Ensure knowledge exchange and provide experience, adequate education and training to motivate action and improve existing practices.

Involve stakeholders

An early involvement of relevant stakeholders as well as political commitment is important for the planning process. The involvement of tenants and users and the analysis of their behaviour are of high relevance. The latter is considered a key element and holds great potential for improving energy efficiency, e.g. by limiting the space requirements of inhabitants. Encouraging appropriate behaviour may render the use of some high-tech measures superfluous. Providing information and training on energy saving and energy consulting for households is thus important for implementing concepts of sustainable urban development. The Swiss concept of promoting the 2,000-watt society can be seen as a promising approach.

Good governance structures and practices support integrated approaches and cross-sectoral thinking and action. Process quality including participatory methodologies is of key relevance for ensuring successful outcomes. All stakeholders involved should be committed to and become engaged in jointly developing integrated scenarios.

Information and participation at Praga's residential buildings, Warsaw @ Praga 2012.

Providing funding for the elaboration of integrated urban development concepts, and for the employment of an energy manager who supervises and coordinates the implementation of the rehabilitation measures, contributes to spreading the coordinated planning approach.

Be inspired, think differently and modernize with expertise and good judgment to create high-quality results.

An intensive exchange of experience, know-how and information between European neighbours, federal ministries, between governments and municipalities, the planning and building sector and all actors involved needs to become a matter of course. Striving for a common launch of quality improvement initiatives and campaigns is recommended. Raising awareness is the starting point. *2 *3 *4

As planning for high quality, sustainable building rehabilitation requires for complex considerations, clients, property owners and investors must be encouraged to seek professional guidance. Planners are the experts to combine energy efficiency and technical know-how with good architecture and design.

Employ concepts of solidarity: Ensure knowledge exchange, provide experience, know-how and information to improve transferability and a greater spread of effective measures.

3. Key Actors of Successful Energy-Efficient Urban Development

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The following chapter focuses on the main categories of stakeholders and the feasibility of engaging them in this approach.

Raising awareness about energy-efficient urban regeneration is one of the main aims of the EnSURE project. We can only achieve this goal with a participatory approach, involving all the relevant stakeholders. Project stakeholders are defined as entities who are interested in the success of the project.

The project involves the social actors in the decision-making process from the initial stages, which is both a goal and a tool to improve the process itself, guaranteeing that

- the decisions are based on shared awareness, consolidated experience and scientific evidence;
- the decisions are influenced by the people who will bear the costs or be the beneficiaries of the project, plan or programme;
- innovative and creative solutions can be taken into consideration;
- new proposals can be elaborated and shared among different actors.

EnSURE aims to develop strategies to motivate and integrate local stakeholders. However, the questions remain: Who are the relevant stakeholders we need to reach? How do we engage them? The following chapter focuses on the main categories of stakeholders and the feasibility of engaging them in this approach.

3.1. Non-Profit Organisations: National, Regional and Local Governments, NGOs

Governmental Actors

Governmental actors are public offices operating on different levels of governance, who often have important competences in connection with energy supply. The region's other municipalities can be included as well, with whom cooperation can be often justified within administrative frameworks or voluntarily on an informal basis.

Governmental arrangements are of key importance in town-level management since governmental strategies and subsidies have an essential initiating effect on the work of other municipal levels. It is crucial to use the awarded tender sources as support for projects that are part of an appropriate strategy, in particular the efficient use of sources and aiming for more favourable return conditions.

In case of multilevel governmental systems the responsibility and working methods of different level municipalities – even in the case of a hierarchical structure – may differ from each other. These differences have to be taken into consideration when planning certain local projects. In each case, it has to be examined whether there are initiatives and interventions which should be attended to not only by the local government but in cooperation with other municipalities.

3. Key Actors of the Successful Energy Efficient Urban Development

It is important to operate treatments with which the decisions are not made by particular interests but towards the general purpose.

Service companies (such as railways) that have operations, land use and energy consumption which often play a significant role in the town's energy consumption are specific actors of the governmental sphere. However, cooperation with these suppliers – because of their organizational characteristics – often requires specific local methods.

Governmental organizations have an important role in regulating and monitoring energy management, enforcing regulations and managing the relationship between the monopolist companies and the consumers. They play a crucial role in raising awareness, disseminating relevant information and also in the development of best practices.

Local Governments

In the following, key actors of local public affairs and the developers of the concept are analysed. There are many actors from different cultures and with diverse attitudes (for example elected decision makers, state officials, public service officials). The local government can be responsible for all the things concerning its jurisdiction. Local conditions define the decisions made and the solutions which will be financially supported by the local government.

The decisions of the municipalities are based on a thorough approach. In the preparation of these projects the mayor's office has a key role. The mayor's office decides on the content of the government's agenda, while taking into consideration the opinion of other stakeholder groups. These groups contribute to local governmental decisions by the widespread communication of their own views and interests. The municipality has a coordinating and harmonizing role in shaping the relationships between different stakeholder groups, in making decisions as to whether they undertake or refuse the demands of some groups. It is also interested in win-win situations for all participants. It is equally important to encourage opinion-forming, to communicate clearly the results and the possible means of progress and to show willingness for initiatives. The local government has the responsibility and the means to find the appropriate stakeholders and opinion leaders, and as a significant consumer it can provide better solutions for the rationalization of energy consumption.

Civil Organisations

Civil organisations have two roles in the concept-developing process. On the one hand, they aim to communicate public interest; on the other hand they seek to achieve their own organisational goals. Their role is of key importance in local publicity (green organisations, local groups and other NGOs.)

The impact of the civil sector differs among cities and regions. NGOs have different strategies in order to achieve their goals. For example there are various consumer interest groups, which usually try to reach their own objectives without any political goals. Other civil movements that have concerns about the environment seek to achieve substantial changes in the lifestyle of other people. In other cases, different professional organizations shape their communication strategy along the lines of their own members' economic interests.

In several cases NGOs seek to directly influence political decision making; therefore they apply tools that are unknown by the municipal administration. It can occur that local civil leaders who have the lobby power to influence local public life – for example during elections – get into a decision-making position. The actors of local life often move among several NGOs. NGOs can also form on regional or even national levels. Among these NGOs only those are part of the key actors who deal with the questions of the given topic on its merits.

Local governments prefer to work with registered NGOs as partners which also comply with formal requirements; however media organizations with no legal background can also have a manipulative effect. Even though it often happens that NGOs operate according to their political sympathies, it is practical to seek the professional opinions of local groups who are politically independent and relatively objective.

3.2. For-Profit Partners, Interest Groups and Property Owners

The means of energy supply and the efficiency of the implemented concept usually directly affect the value of property and also its maintenance costs. Property owners move on a wide range of levels depending on the size of their property and their professional competences. The attitude of property owners is influenced by the size of their property.

Whereas small property owners are usually less experienced in enforcing their own interests and often approach the problem from an emotional perspective, big owners (especially business organisations) show rationality, professionalism and high-level lobby power. Among local actors it is important to distinguish between the owners and the users of the properties (such as tenants). The examination of the partners who are to be involved is different in each case. When planning cooperation with these groups it is crucial to ensure appropriate capacity to manage the situation.

Constructors and Planners, Craftsmen (Professionals)

These are the professionals who are able to work with the tools of operative interventions; they are usually interested in introducing new solutions. However during the project it is important not to define the goals but only the instruments, and thus help the intelligibility of targeting. These instruments have an important role in the presentation and familiarization of different solutions and possibilities.

On the other hand it is vital to accommodate these instruments to local capabilities, and the different institutional and financial possibilities in order to be able to select and communicate suitable solutions to citizens and institutions. It is important to take measures in which the decisions are not made by particular interests but with the general purpose in mind (for example in collaboration between the designers, contractors, auditors, controllers).

Energy Providers

They make direct profits from providing energy, which determines their attitude to the introduction of innovations. For municipal companies, beyond economic reasons, political purposes can also play a part in decision making. For governmental suppliers it is less typical. Lobbying work often takes place at the higher levels of government. In the case of non-monopolistic suppliers it is clear that in order to attract consumers they seek to improve their supply and conditions. In both cases it is common that they (as public relation measures) support experiments which are less progressive but more favourable from the perspective of profits. Occasionally, it presents a problem if the operation of the supplier is not transparent and the municipality that is responsible for the service does not have the adequate tools and knowledge to check the findings and to ensure the best solutions in the work of the suppliers.

Financial Institutions

They can ensure the financial background of investments in connection with energy renewal. Since they are interested in capital investments that have a safe return, they may also occasionally be the pioneers of development through their corporate social responsibility activities. Considering the fact that rationalising energy consumption – within appropriate limits – can lead to a very high return on investment, the interest of financial institutes in offering credit is increasing. In the funding of energy savings a specific group is formed by the organisations who bear the costs of modernization instead of the property owners and do the necessary work themselves (on the basis of an agreement with the property owners) ensuring the return on energy savings.

Chambers, Labour Organisations, Craftsmen

The involvement of these actors of economic life (who are not key actors) facilitate their input in the concept, and their participation in implementation. The aspects of their involvement are essentially the same as the group of constructors, planners and craftsmen, but their lobbying ability is usually higher.

3.3. Inhabitants

The involvement of the inhabitants who are directly concerned by the proposed actions must differ from the involvement of other local inhabitants. The involvement of directly affected residents and agreement with them is often unavoidable for successful initiatives. The wider public should be involved to increase awareness of commitment to energetic and environmental affairs.

The involvement of the population can be ensured by using several tools in order to disseminate information among the public. Among the instruments characterized by one-way information flow, a prominent role can be ascribed to – for instance – free municipal newspapers, local media, web pages and information boards. The Internet also facilitates the diffusion of large-sized publications, documentation and awareness-raising tools such as calculators, games and other innovative methods.

Face-to-face tools involve a wide range of options from simple information forums to customer services and workshops seeking joint solutions using role plays and community games. The use of appropriate tools also serves as a good feedback device for local governments, NGOs and other groups.

During the participatory process, local governments should facilitate the initiative by promoting confidence. That is why it is very important for the municipality to find those actors (among the wider public) who can mediate the proper "pieces of information" to the silent majority (e.g. common representatives, opinion leaders). The role of opinion leaders can be very important in communication.

4. The Steps of Successful Planning

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This chapter discusses the eleven steps necessary for the application of the concept. The planning process is not a professional script but a multi-player, joint-purpose document. One of the most important factors of the concept is the methodology it applies.

How to Design a Successful Planning Method

The planning process always starts with the design of the methodology. Partners who are to be involved have to know the details of the process. The method should be clearly defined.

It is equally important to inform as many people as possible about the planning process, its main steps and their significance. Therefore it can be ensured that everyone who is concerned with the concept can successfully participate in the planning process, trust in its executive bodies and contribute to the realization of the project.

Who is Involved?

Stakeholders and Decision-Makers

When choosing the participants in the project it is worth distinguishing between local key actors, and how we can guarantee their participation in the planning and implementation process.

A complete energy concept requires the participation of the key actors by means of both a multiplayer discussion and an individual approach. A well-structured process and the creation of widespread agreement are also attractive conditions for decision makers. Stakeholders can be very diverse. However, the contributions of local interest groups, SMEs, important economic, urban, regional and national actors are necessary in order to plan an efficient urban climate and energy strategy.

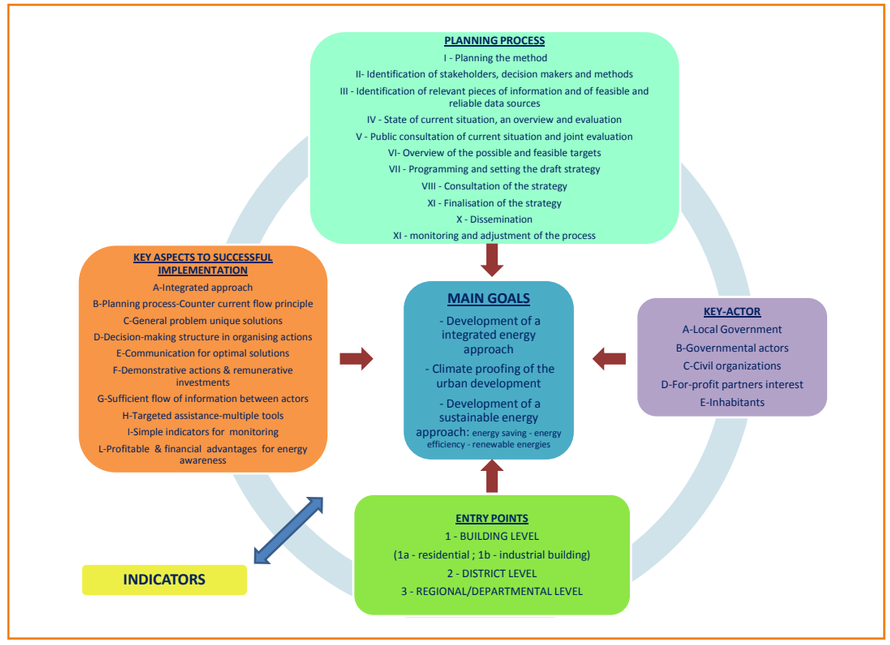
Main Principles and Methodology

In the recent past, the Energy Hierarchy Concept was defined by the Council of European Municipalities and Regions (CEMR), which welcomes and supports the EU Energy Strategy of the European Commission and the European Council's commitments to achieve a sustainable and efficient production and use of energy. The concept continues to be of benefit in encouraging European legislators to provide a real vision on the in-depth structural changes that are needed in order to move towards an energy-efficient European society.

CEMR advocates an energy hierarchy which prioritizes energy efficiency. The priority must be to use less energy, and to avoid the consumption of energy – energy efficiency measures contribute to this goal. Secondly, the energy that we cannot avoid consuming must be used efficiently. Energy efficiency policies are in general more economical than the development of renewable energies. However, the development of the latter still constitutes an essential third step in order to respond to the remaining need for energy use in a manner that is sustainable for the environment.

Lastly, any continuing use of fossil fuels must be as clean and efficient as possible (co-generation, switch to "cleaner" fossil fuels, more efficient and cleaner technologies etc.).

The priority must be to use less energy, and to avoid the consumption of energy – energy efficiency measures contribute to this goal.



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The Energy Hierarchy is one cornerstone of the EnSURE project, as the reduction of energy demand and using energy more efficiently are the priorities of an urban energy concept.

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Moreover, the content of an energy-efficient urban development tries to enhance the existing aspects of integrated urban development at three levels of interest:

1. local (including houses and apartments for residential and industrial purposes),
2. district,
3. regional/department level.

There is another interesting aspect to analyse: the reasons that motivate someone to start an energy project. In the following the entry points or the key events for an integrated energy action will be discussed.

Information: Feasible and Reliable Data Sources

Efficient planning is based on specific data that represents the typical situation and process reflecting the specific features of the area. The social aspects of the planning process such as energy consumption habits, economic background, the origin of used energy, the rate and method of energy production are of thrive importance. Even though finding appropriate indicators, researching and acquiring data sources is a meticulous task essential for the planning process.

Possible data sources: systematically collated, national statistical data (for example locally collated data, used for collecting taxes or the results of occasional surveys). It is especially important that local bodies should be updated on their own energy affairs, such as the method and amount of their consumption. Even though in many countries this is not part of the everyday practice, this approach is essential for local bodies to represent the cause of energy awareness in front of other actors. Preparing the status report of communal consumption can be a meticulous task, however it is worth the effort as later it can serve as a point of comparison while communicating the results of interventions and the monitoring of the process.

Status Report, Overview and Evaluation

The baseline situation shows the current state and forms the basis with which to contrast the goals to be achieved. In order to introduce the present situation we should preferably use clear and simple data. Evaluation always means comparison with something, for example with other similar settlements, with the national average, etc. It is essential that the basis of comparison should be adequate for the readers. In order to be a motivation for the realisation of future interventions, the comparison ought to be harmonised with the real situation and goals which are considered feasible by the public.

4. The steps of successful planning

It is of thrive importance that the evaluation method has to be harmonized with the participants' culture and point of view.

Public Evaluation for the Common Goals

Conciliation about the evaluation of the situation is essential for corporate vision and planning. Therefore already in this stage of the planning it is worth organising an informative evaluation meeting with the key actors and informing the public.
It is of thrive importance that the evaluation method has to be harmonized with the participants' culture and point of view. It often occurs that during the evaluation process, abstract, professional point of views are dominant which are difficult to understand by the public, therefore they are less effective in spinning off further participation.

The Scale of the Possible and Feasible Objectives

The scale of possible and feasible objectives alters. A wide array of actors has to be taken into consideration, such as locals, SMEs whose activity concerns several interest groups and also the actors of the public and private sector, realising investments of various scales. Therefore despite that the various activities of the scale require different approach and intervention from the public sector, there ought to be no difference in terms of importance.

Programming and Setting the Draft Strategy

Formulating the actions, actors, financing, timing and communication concerning the defined goals with professional work is to be set in the concept. The tasks of the various actors, their relation to the others and the project steps are to be worked out. The financial requirements and sources, possible additional means that may be necessary have to be listed as well.

Whereas the SEAP should not be regarded as a fixed and rigid document, as circumstances change, and, as the ongoing actions provide results and experience. It may be useful and necessary to revise the plan on a regular basis. Opportunities to undertake emission reductions arise with every new development project to be approved by the local authority. The impacts of missing such an opportunity can be significant and will last for a long time. This means that energy efficiency and emission reduction considerations should be taken into consideration for all new developments, even if the SEAP has not yet been finalised or approved.

Consultation and Coordination of the Draft Strategy

The previously formulated professional strategy needs to be discussed with the key actors, then extensively disseminated. The next step is to develop the strategy for local decision-making. The draft strategy is the first feedback for the participants of the process, where they can see their common objectives. Their feedback and their further suggestions are essential for the complex, final content.

Preparation of the Strategy for Decision-Making

During the decision-making process, the objective presentation of the participatory action is essential. According to the experiences, it strengthens the decision-makers' trust in both the decision-making documents and the people behind them. For the decision-makers it is important to know that their decisions are based on participatory planning and communication.

Finalisation of the Strategy

Finalisation of the documents with revising the needed changes emerged in the structure of the local governmental decision-making is the next step. During the finalisation, all emerged aspects should be taken into account.

Dissemination

Extensive dissemination of the received document among the participants in the work, the key actors and also the wide public opinion is essential thus helping the realisation and speeding-up of the implementation-intent activities. During the dissemination, a wide range of communication tools should be applied. Even though many municipalities publicize their decisions on their website, it usually reaches only a small segment of the concerned population. Therefore traditional promotional tools, such as posters, leaflets, manuals are still of thrive importance as they summarize the content of decisions in a simple way, motivating further participation.

The SEAP should not be regarded as a fixed and rigid document, as circumstances change, and, as the ongoing actions provide results and experience. It may be useful/ necessary to revise the plan on a regular basis.

Opportunities to undertake emission reductions arise with every new development project to be approved by the local authority. The impacts of missing such an opportunity can be significant and will last for a long time. This means that energy efficiency and emission reduction should be taken into consideration for all new developments, even if the SEAP has not yet been finalised or approved.

5. Cornerstones of Effective Implementation

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Many different key elements of a successful and efficient energy-program can be identified. The approach of energy and urban planning has to be implementation-oriented. Drawing on the experience of EnSURE project partners the harmonization of different conditions, interests, working cultures and habits can be summarized by the following key issues.

Integrated Approach – Interdisciplinary Crosssectoral Working Structure

The joint planning of different types of energy consumption requires the cooperation of the different concerned areas based on an integrated approach. This means that each professional and interested citizen should participate in the implementation of the jointly formulated objectives according to its own character and working method. An integrated approach requires organised, joint work of several organisations and departments with the coordination of the local government. Therefore a responsible and competent person is always necessary at the municipality to create a link from the working team to the administration and also to the local council. In the planning process attention should be paid to the operating characteristics of the organisations involved in the workflow.

Coordinated Planning Process for Multiple Actors Fostered by Counter-Current Flow Principle (Gegenstromprinzip)

A planning process, involving multiple stakeholders should cover the following characteristics:

- overall goals that show the decisions which are important for a wider audience, also showing the place and role of smaller communities, individuals and interest groups
- bottom-up formulated goals that have an influence on overall goals.

Such composition of the planning process is necessary to reveal and harmonize the different aspects step by step based on the aforementioned characteristics. In the course of this process it is fundamental for the project leader to invite other actors to participate in the process.

In case of a bottom-up project, for instance a municipality should involve the region or the national government. Implicitly the first step is to get to know and consider overall plans and aspects as far as possible, and initiate modifications if necessary.
In case of a top-down project – for example a municipality wants to involve NGOs – it is important to know the plans of the actors that are invited, and also the possible adaption of these elements in the first drafts of the superior plans. In the following, these two approaches will be presented. Both processes have to be harmonised during the communication procedure.

Concept Oriented Top-Down Approach from District Concept to Pilot Project (Deductive Approach)

1. Setting up a local cross-sectoral project team,
2. Clarification of the local institutional framework,
3. Physical analysis and potentials,
4. Involvement of local key actors,
5. Development of a local common vision for long-term energy goals,
6. Elaboration of specific objectives and sub-goals,
7. Definition of indicators to monitor the process,
8. Definition of an energy action plan: ranking and a time frame for the implementation of measures,
9. Discussion and resolution of the energy concept.

5.
Cornerstones of Effective Implementation

Many different key elements of a successful and efficient energy-program can be identified. The approach of energy and urban planning has to be implementation-oriented.

Project oriented bottom-up approach from pilot project to district concept (inductive approach)

1. Setting up a cross-sectoral project team,
2. Definition of energy objectives of the local pilot project,
3. Feasibility study for the pilot project: technical, financial criteria to assure implementation and transferability,
4. Detailed definition of criteria for the pilot project
5. Public tender and competition,
6. Involvement of local key actors (stakeholder analysis),
7. Implementation of the local pilot project,
8. Documentation, discussion, evaluation and dissemination of results,
9. Conceptual design for the development of a district concept.

Returning Investments, Sustainable Financing

In recent years, a relevant number of energy-efficiency (EE) and technologies of renewable energy sources (RES) have been largely tested and proven to work and be profitable within a foreseeable time span: if properly financed, the pay-back time of investment costs might actually be significantly shortened. However, a huge number of projects which have potentially compelling economic returns still remain unimplemented. Major causes for this pitfall are due to the lack of specific EE and RES finance and delivery mechanisms and the lack – in some markets – of bankable projects.

From the experience of EnSURE it can be clearly seen that there is a lack of qualified players who have the technical and economic skills, might act as a bridge between the actors (both in the private – residential and industrial – sector and the public sector) who are interested in implementing EE and RES projects, on the one hand, and financial actors (both private – banks, private funds – and public) who are interesting in supporting these projects on the other hand. Such qualified players (e.g. qualified ESCos) should give appropriate guarantees (in terms of reputation, skills and probity) to both investors and financing organizations.

General Problems - Unique Solutions

The comprehensive problems and objectives in municipality or district level documentations could be very similar to city or country documentations. Despite significant cultural differences, it is possible to harmonise them since the offered solutions are adapted to the concrete project circumstances. The planning process should follow a strategic planning process, thinking always ahead of the next step(s).

Depending on the different contexts, significant differences may arise as a result of certain planning steps. Therefore regular feedback is necessary in the process. Thus planners can shape the step-line (which is planned according to a kind of pattern) based on the specialties that have been revealed during the process.

For instance, they can involve new participant groups into the method, which could shed light on new aspects that has not been considered before or reveal some aspects more detailed as done before, if these changes and new aspects make sense in satisfying the needs of the people involved in the working process. Working along the same or similar lines can lead to unique solutions (depending on possible toolkit sometimes with special aspects) occasionally creating new, innovative instruments.

Although some problems return in several places it is not worth mentioning them in the communication (this is further supported by the indifference from the stakeholder-side). The danger of generalization is also noticeable when professional actors do not make an effort to become familiar with the local conditions and enforce solutions that only superficially tackle local problems.

Decision-Making Structure in Organising Actions

The cooperation with the key stakeholders in the planning process and the comprehensive publicity work always means a decision preparatory activity. The formal decision is always made by the concerned public authorities or by the local government.

When realising some measures, the decisions of the concerned actors can be very important, as well as cooperation in decision process ensures the preparation of multi-directional (involving several organisations) conclusions.

6. Secret Ingredient: Innovative Finance of Energy-efficient Urban Development

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Starting from the existing experiences, the project will provide practical guidelines and good practice for financing urban energy efficient rehabilitation as well as political recommendations for the needs and for the design of innovative financial tools.

One of the main objective of the EnSURE project is to define innovative financial instruments that can be applied. Therefore, the analysis was based on existing financial schemes, i.e. on financial tools that have already been proven.

The experience gained by the project partners from discussions and the elaboration of innovative financial tools revealed a lack of qualified players who could act as a bridge between the actors. Such players could connect actors (in the private residential and industrial sector and the public sector) who are interested in implementing energy efficiency and renewable energy projects with financial actors (banks, private funds and public sector) who are interested in supporting these projects.

Such qualified players should give appropriate guarantees (in terms of reputation, skills, probity) for both the investors and the financing organizations.
Within the EnSURE project, such innovative financing instruments were developed and promoted that might make it possible to overcome current market and legal barriers, in order to sustain EE and RES projects. The development of such financing instruments was based on the monitoring of existing local, regional, national and EU financial practices according to the following categories:
- Financial schemes,
- Climate energy fund,
- Energy performance contracting models.

6.1. Innovative Financial Schemes

Innovative financial schemes for energy-efficient urban redevelopment and refurbishment and renewable energies can be targeted at different groups (for example public or private owners), different uses (residential, commercial etc.) and different technologies. Financial schemes aim to boost investments in energy efficiency or renewable energies through the achievement of economic benefits (extra revenues, reduction of costs) and environmental benefits (reduction of pollution).

6.2. Local/Regional Climate-energy Funds

Climate energy funds aim specifically at funding and supporting local and regional voluntary and cooperative implementation of climate protection measures. They should involve several stakeholders within the regional administrations, municipal energy supplier etc. The local/regional cooperation constitutes a model for cooperative climate protection through the combination of management interests, consumer needs and local activities (local action). It requires participative strategy at local, regional, and national levels.

6.3. Contracting Models

The aim of energy performance contracts is to carry out energy-saving measures without burdening the promoter's budget; energy contracting means that a contractor carries out energy saving measures at their own expense. Some common examples include insulation activities and replacement of boilers.

6.4. Selected Financial Best Practices

Financial Schemes

Urban Energy-Efficient Rehabilitation (Municipal and Social Infrastructure)

The Urban Energy-Efficient Refurbishment Financial Scheme is a grants programme which is organised on a federal level and addresses the improvement of the energy efficiency of the municipalities. The German Federal Ministry of Transport, Building and Urban Affairs (BMVBS) and KfW Promotional Bank of the Federal Republic and the federal states are in charge of the implementation.

These grants can be awarded for the preparation of integrated rehabilitation / neighbourhood concepts, as well as it can reimburse the costs for a refurbishment manager, who supports and coordinates the implementation of such concepts.

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The direct target groups are the municipalities and indirect target groups (through municipal utilities) are housing associations and private homeowners or neighbourhood homeowners associations. This programme is intended to result in energy-efficient and low-carbon municipalities, and contributes to the energy concept of the German federal government to achieve the climate protection goals for 2020 and 2050.

These grants are available from the special „Energy and Climate Fund" and cover personal and material expenses (65% of the costs limited to 120,000 € per neighbourhood in the form of German governmental loan packages for specific development purposes.
The time scale of the grants are the following:
- 1 year grant for preparing integrated rehabilitation and neighbourhood concepts,
- max. 2 years to subsidise the costs for a refurbishment manager.

The promotional approach is aimed at improving the efficiency of an entire section of a town. It takes into consideration the interdependencies of energy measures - such as between the degree of the building rehabilitation and the resulting adjustments in the supply of heating and electricity.

This new programme is designed to achieve synergies in neighbourhoods through a rehabilitation process that goes beyond individual buildings to involve broader urban areas. In close cooperation with the federal state, the pilot phase was launched on 15. November 2011.
The programme means a shift from being narrowly focused on building rehabilitation. The programme has been recently launched as stakeholders have identified a need for promoting integrated and conceptual approaches.

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Energy Efficiency Credits
The Energy Efficiency Credits (EECs) or White Certificates are innovative financial schemes for energy saving at national level in Italy. They provide an incentive for energy saving and energy efficiency projects in various industrial sectors, service industries and the residential sector. It imposes obligations on large electricity and natural gas distributors. These projects can be carried out by energy services companies (ESCos), electricity or gas distributors or parties which have appointed an energy saving and rational energy use manager. The AEEG assesses the projects presented, certifies the consequent energy savings and then authorises the energy markets regulator to issue energy efficiency credits for the appropriate amount of certified energy savings. Electricity and gas distributors can either fulfil the obligation to increase energy end-use efficiency by implementing energy efficiency projects and consequently obtaining energy efficiency credits, or by buying energy efficiency credits for other parties, through bilateral contracts or within a specific trading system established by the energy markets regulator (GME).

There are no differences concerning the technology used. The only distinction made is concerning the type of operation carried out to achieve the primary energy saving:
1) Type 1 EECs, proving that primary energy savings have been made through operations to reduce the final consumption of electricity;
2) Type 2 EECs, proving that primary energy savings have been made through operations to reduce the consumption of natural gas;
3) Type 3 EECs, proving that savings have been made in forms of primary energy other than electricity and natural gas which are not used for automotive purposes;
4) Type 4 EECs, proving that savings have been made in forms of primary energy other than electricity and natural gas which are used for automotive purposes.

Under the Ministerial Decree of 21.12.2007 and Legislative Decree No 115/2008, distributors may use all four types of credit to fulfil their obligations. Distributors may obtain the tariff reimbursement by handing over type 1, 2 and 3 credits.
These energy saving projects can be carried out by energy services companies (ESCos), electricity or gas distributors or parties which have appointed an energy saving and rational energy use manager.
There are no technology-specific targets, but national quantitative targets have been set for reductions in primary energy consumption. Several technologies which use renewable sources in the heating and cooling sector are included amongst the possible operations which could be carried out in order to fulfil the obligation.

This table shows the annual targets updated by the Ministerial Decree of 21.12.2007, expressed in the million tonnes of oil equivalent (Mtoe) energy unit.

Year	Elecricity (Mtoe/year)	Gas (Mtoe/year)
2008	1.2	1.0
2009	1.8	1.4
2010	2.4	1.9
2011	3.1	2.2
2012	3.5	2.5

According to Article 6 of the Ministerial Decree of 21.12.2007, the costs incurred by distributors liable for this obligation in implementing projects aimed at reducing the consumption of electricity or natural gas will be covered by the tariff components for electricity and natural gas transportation and distribution, but only for the part not covered by other resources. The same distributors also receive a tariff contribution for each EEC handed over from the Electricity Sector Compensation Fund (CCSE). The cost to the CCSE of providing these contributions is covered by the account for charges arising from measures and operations to promote the energy end-use efficiency of electricity. To keep the requirements up-to-date, the AEEG periodically updates the technical data sheets used for quantifying energy savings. These sheets are a pre-conditions to the implementations of this kind of system.

The "energy efficiency credits" scheme has been operational since 1 January 2005. The Ministerial Decree of 21.12.2007 set targets for reductions in primary energy consumption until 2012. Obligations for the years after 2012 will be defined by a subsequent ministerial decree.

This system has no sector specificity because all firms could implement energy saving projects.
The AEEG drafts and publishes a quarterly report on the progress of certified energy savings. The report contains information and statistics and, in particular, data on the certification of savings made in each region, divided up into the standardised analytical data sheets in force, as well as a list of certified savings made for final results-based operations with the savings made or expected.

This incentive scheme allowed the development of several energy-saving projects in order to reach the stated objectives.

Local/regional climate energy funds

Intelligent Condominiums
Based on the experience of the Italian Development Agency GAL Genovese and of their local partners, we introduced so-called "intelligent condominiums" which contribute to energy efficiency and energy-saving projects. Their main objective is the refurbishment of buildings and condominiums using the ESCo (Energy Service Companies) mechanism by assuming the risk of the initiative and freeing the end customer from any organizational burden and investment.

The companies receive payment from the share of savings achieved by the intervention itself and are financed through the instrument called "Impresa più" (an initiative activated by the Province of Genoa and the Chamber of Commerce of Genoa to facilitate the credit access for small and medium sized enterprises in the Province).

Funding is offered to signatory public bodies from third parties through bank financing with guarantees. A guarantee fund was set up within the project to cover part of the bank guarantees (up to 80%) that an enterprise was to provide when joining the refurbishment project.
The financial coverage of the found has been provided by the Province of Genoa with 500,000 € and by the Chamber of Commerce of Genoa with other 500,000 €.
The requirements of entrepreneurial project partners:
- To be an Energy Service Company,
- To obtain the quality certification for implementation (ex D.lgs. 115/2008),
- To have professional qualifications relating to interventions.

The actions do not have any time constraints as the fund is a revolving type. We believe that we can achieve an adequate sampling in the span of 5 years.

As it was expected, energy refurbishment of residential condominiums with central heating and with approximately 30 units was targeted. So far an intervention on a condominium has been realised in the centre of Genoa and other 16 have started.

6.
Secret Ingredient: Innovative Finance of Energy-efficient Urban Development

Subsidy from National Fund for Environmental Protection and Water Management

According to our project partner RSM Praga, the partners gained experience about the abovementioned local/regional climate energy fund. This national found targets energy efficiency and energy savings.
The new residential subsidy scheme consists of a combination of rebates and loans. Residential home owners can apply for a rebate of 45% and a standard banking loan of 55% of the investment costs for a solar thermal system, up to a maximum of PLN (Polish Zloty) 2,500 per m^2 of collector area (approx. 628 €/m^2). The programme applies to simple solar water heating systems only, but not rebate and loan cover combined systems which provide additional supply space heating, or solar cooling installations.

The target group are home owners and owners of flats in multi-family buildings.

As an expected result of the programme, about 200,000 m^2 solar panels are expected to be installed. There are around € 75 million segregated funds available for the years 2010-2014.

Public money was supplied by the National Fund for Environmental Protection and Water Management (NFOŚiGW). The total budget is 300 Mio PLN (75 Mio EUR). Currently the third edition of the programme is being carried out. The new programme is always consulted with the market actors. Some 11,000 applications have been submitted so far. The only constraints are that subsidy can only be granted for solar collectors with a specific certificate (PN-EN 12975-2 or Solar Keymark) and that house/flat owners with district heating are excluded from the funds.

	Applications from homeowners	Applications from owners of a flat in multifamily buildings	Total
Number of applicants	10.658	728	11.386
Total number of collector area from these applications	34.057	37.813	71.870
Average solar thermal system site (m^2)	3m^2	52m^2	6m^2

Contracting models

Energy Service Companies (ESCo) – Standard Contracts
The Italian experience about contracting models facilitates energy efficiency at national level is worthwhile to share. Standard contracts represent a kind of outsourcing in the management of energy. They are based on a direct relationship between the ESCo and its clients.

Energy Service Companies are natural or legal persons that provide energy services and/or other improvement actions for energy efficiency in the users' facilities or buildings. They also have to accept a certain margin of financial risk. The payment of services is gained (totally or partially) through the achieved levels of improvement of energy efficiency. The primary objective of ESCo thereby is to sell a guarantee of energy saving.

Typically, the client puts the ESCo in charge of the management of its own plants; the ESCo thus pays the energy bills over the whole period of the contract. In return for this service, the ESCo gains a sum equal to the expenditure of the client before the contract, minus a discount which has been settled before with the client. Such contracting model is typically applied to climate-control services, but might be applied as well to other kinds of energy requirements. In particular, Public Administration Standard Contracts take the shape of "Heat management contracts": the ESCo is put in charge of keeping a given temperature in the buildings used by clients during the day and previously scheduled time in return for a flat rate sum.

Standard contracts are basically aimed at cost saving (and thereby not necessary at an optimization of energy consumption). There is not a real sharing of the effects of energy saving between the ESCo and its client, and there is not a shared goal of rationalization of energy consumption.

The payment of ESCo is defined at a flat rate for each intervention or is represented by the cost saving gained over the time horizon covered by the contract. Standard contracts might be financed by means of debt, with the ESCo which is put in charge of the debt.

The main condition for standard contracts is the availability of ESCo working in the region/country. Another relevant condition is the availability of financial instruments supporting energy efficiency (first of all, in the case of Italy, Energy Efficiency Credits (EECs). EECs, which are also named White Certificates (WC), are securities which prove the saving of energy. They are released in the equivalent amount of the primary energy that is saved. Also the bank sector might play a relevant role.

There is not a particular (or fixed) time period regulating the length of the contract. However, usually Standard Contracts last from 10 to 20 years and are considerably longer than EPC. Standard contracts are widespread in a large array of final users; in particular, they are applied by Public Administrations. The practice is quite widespread in Italy; to date, standard contracts are by far the most popular contracts made by ESCo. The actual result is typically cost saving, which is not always linked with the optimization of energy consumption: this is not a clear and specific requirement of Standard Contracts.

ESCo Energy Performance Contracting (EPC)
Another contracting model experience found in Italy is the EPC. Italian regulations define Energy Performance Contracting as "Bargaining agreements between a recipient and a supplier regarding an action for improving energy efficiency, in which the return for investment is gained in relation to the level of improvement of energy efficiency set up by the contract". Bargaining agreements put the ESCo in charge of the design, implementation, management and maintenance of the energy efficiency action: the ESCo takes on the technical risk, the judicial risk to gain the target improvement performance and, partially, the financial risk. The main feature of EPC lies in the fact that the ESCo's payment depends on the actual achievements of the client through the modernization of the technology, plants and buildings.

There are two main kinds of EPC:
Guaranteed Savings EPC: in this case the ESCo guarantees a given performance of energy efficiency (in terms of consumption of KWh) which is arranged in advance and, in this way, frees the client from any performance risk. However, it is the client to assume the financial risk related to the payment of the debt contacted for the required investments (by banks or other financial institutes).
Shared Savings EPC: in this case the ESCo and the client share the profits and cost savings for the time horizon of the contract. The ESCo takes on the technical risk related to the performance linked with return and takes on the financial risk as well. In this kind of contract, the ESCo owns the plants and operations; the ownership is transferred to the client at the end of the contract.

Energy Service Companies (ESCo) are natural persons or legal persons that provide energy services and/or other improvement actions for energy efficiency in the user's facilities or buildings and that accept in this way a certain margin of financial risk. The payment of services is gained (totally or partially) through the achieved levels of improvement of energy efficiency. ESCo thereby are aimed at selling a guarantee of energy saving.

The starting basis is the current expenditure of the client (before the contract). The cost savings gained through energy efficiency actions are used, partially, to pay for the investments (i.e. repay the debt to banks and/or other financial institutes); on the one hand, to compensate the services of the ESCo; on the other hand as a return to the client. Furthermore, the ESCo and its client share and develop the incentives related to the Energy Efficiency Credits (EECs). EECs, which are also named White Certificates (WC), are securities which prove the saving of Energy and have been released in the same amount of the primary energy that is saved.

The main condition for standard contracts is the availability of ESCo. The second condition is financial instruments supporting energy efficiency (first of all, in the case of Italy, Energy Efficiency Credits (EECs). EECs, which are also named White Certificates (WC), are Securities which prove the saving of Energy and are released in the same amount of the primary energy that is saved. Finally, other financial institutes play a relevant role: usually major investments for the modernization of plants, technology, and building require huge financial resources.

The primary objective is energy saving through the optimization of energy consumption typically settled in a contract ranges 5-10 years. EPC is used in a large array of final sectors, they are not sector specific.

EPC have been so far not very popular, and considerably less popular than Standard Contracts (see following practice).

The spreading of EPC requires the development of the financial sector: today credit institutes do not actually recognize the guarantee provided by ESCo, i.e. do not reward in a proper way energy efficiency actions. This helps explain the limited popularity which has been reached so far in Italy by EPC.

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Besides providing technical support, financial means should foster private investments. Energy-saving and cost-efficiency are crucial and convincing arguments for users. Thus financial instruments and funding opportunities were analysed on European, national and regional levels to finance the implementation of measures of elaborated urban energy concepts.

7. Information and Participation

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7.1 Material approach - profitable investments to enhance energy awareness and environmental sensibility

Technological changes and the availability of new products combined with new laws and rules create a favorable context for energy efficiency related decisions.

The diversity of European places and territories is an exciting laboratory. By means of a bottom-up approach it is possible to learn the logic of relationships among actors, institutions, problems and solutions. In different European corners communities try to solve similar problems related to energy efficiency issues. In different territorial situations, by homologue but not analogue institutions the analysis of on-going and concluded experiences offers a unique opportunity to observe differences and similarities in the implementations of energy transition actions.

The word participation has many meanings and it contains a large variety of actions dealing with inclusion and communication, moving from simple information of citizens toward a deep engagement of territorial actors on choices and decisions.
The right to participation in environmental questions, introduced by the Convention of Aarhus, is entwined with the reflections of good governance in action at an international level, and in Europe, in particular starting with the publication of the white book on European governance (Commission of the European Community 2001). Such reflections are aimed at identifying and adopting "new ways to exercise the power conferred by the citizens to the public institutions", but above all to seek different ways with which "public institutions, citizens and businesses manage their common interests" through the broad "participation of the citizens and of the organizations in the definition and implementation of the politics".

Energy issues represent typical situations in which participation is bounded in determined points of decision-making processes, or in which environmental dimension of sustainability adsorbs social and political dimensions. Normally involvement of major groups and civil society are required only for promoting new behaviours in energy consumption patterns.

On the contrary, civil society is less involved in decision-making related to energy supply, energy structure, and energy vision. One of the main challenges of the energy transition toward 2020 horizon is how to involve present and future energy related actors building an effective partnership for energy saving urban development projects.

Building an effective participation means to take into account three key concepts: trust, cooperation, communication. Trust among actors is the precondition to develop effective communication and to deepen cooperation.

Implementing participatory processes could be didactically pursued by some basic steps. First of all we need to be aware of the legal and institutional framework in order to set up the objective framework formed and structured by various levels of urban planning standards and principles as well as the available financial resources and instruments, completed by a clear map of the responsible institutions for the different issues.

Secondly interests and situation have to be mapped in order to find out about ideas and motivations in relation to energy saving urban development of the municipality and the main partners and stakeholders. This mapping activity can be completed with the draw of an up-to-date picture on the present situation and the energy users' habits. In order to complete this step a local government/municipality level research and analysis could be useful.

The third step includes the exploration and awareness raising measures. The benefits of the project should be clarified and communicated in advance to make social actors and stakeholders really interested in having a stake and being a partner in future energy saving urban design and development projects at local level.

The municipality could make the first cooperative step to create a trustful relation with future partners, for example in the form of offering special benefits for actors participating in energy saving development projects or granting tax reductions in case of private businesses. In case of municipality owned buildings (public schools, health care institutions etc…) energy savings in maintenance costs could be used for human resource or other infrastructural developments.

A fourth step is about active participation in order to incorporate their ideas and suggestions. Moreover actors should be seen as active participants in the project preparation as well as in the decision-making process of district level and local government policies, in order to generate a community-based multi-partner energy saving and sustainable local development project.

This process can follow two main paths: the involvement of citizens by public forums, civic discussions with local inhabitants; or a more institutionalized form, like tri-partite consultation bodies, incorporating representatives of the municipality, local private enterprises and civil organizations.

A fifth step is about communication in order to gain feedback on the afterlife of the project and to maintain contact and develop a two-way communication channel with partners.

Finally we have to deal with "future energy consumers" to organize awareness raising programs towards „smart energy usage" for present, and especially the future energy consumers, directly in kinder gardens, primary and secondary schools or in the energy consulting/information offices/points by the help of professional experts and NGOs.

The key word to promote participatory and inclusive processes in energy efficiency transition is "to Combine".

In order to move energy transition forward it is important to look for the reasons that motivate someone to start an energy action formulating a simple question: What is the best point of time to start and to suggest an energy innovation proposal? The answer of this question is the recognition of the entry points that means the key occasions for an energy action.
Entry points start at building level (residential and industrial buildings), at district or regional/departmental level. On the other hand for each level there are four categories of events generating key occasions for an energy action: social, technical, economic and political. For example, changes in the family structure (i.e. new born, presence of disabled relative…) can force people to move into a new house or to refurbish the existing house. On a more general level a change of mind of people are opportunities to take decisions about energy issues. Technological changes and the availability of new products combined with new laws and rules create a favourable context for energy efficiency related decisions. The ability to combine an energy transition strategy with the right time for change determines the pathway for successful interventions.

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7.
Information and Participation

The key word to promote participatory and inclusive processes in energy efficiency transition is "combine":

1. Combining face to face tools with new technologies;
2. Combining participation about short term visible results wilt long term more strategic changes;
3. Combining administration driven initiatives with citizens driven initiatives.

The need to combine these three dimensions (methodology, time duration and key actors in facilitating the processes) results from the observation of successful strategies and the way of overcoming difficulties of different ENSURE partners and their projects. So it is possible to recognize that:

- There is a growing need of integrating strategies of information, communication and participation;
- Despite the development of the new information technologies the participation online shows large possibilities to be improved and to integrate in constructive ways of face to face participation;
- The panorama of initiatives in terms of social mobilization and energy transition shows an increasing dynamic. It is important to avoid fragmentation and competing initiatives. Networking is the right way to "save energy";
- The practice of local administrations towards energy transition governance should combine in a wise manner transparency, accountability and participation;
- The practical way to develop initiatives with citizens (taking into account that at the same time they are dwellers and daily decision-makers about energy) is to start "from near and easier" to move "far and further", in other words it is important to start with an easy successful performance (in participatory energy transition) before involving in more complex tasks;
- There is growing need to diffuse and share successful experiences in a sort of glass house or laboratory in which interested people can participate in processes understand results.

The word participation has many meanings and it contains a large variety of actions dealing with inclusion and communication, moving from simple information of citizens toward a deep engagement of territorial actors on choices and decisions.

7.2 Network of Energy Info Points

The Network of Energy Info Points is one of the most relevant key outputs of the EnSURE project that demonstrates in concrete the significant concept linked to the project: communication & information & participation.

Existent info points and new ones created within the project are interlinked to a highly performing network disseminating know-how on the better use of renewable energies and the rehabilitation of buildings and financial instruments available. The Network is composed of six Info Points (Ludwigsburg, Genoa, KEK-Hajdúszoboszló, Praga-Warsaw, Sopot, Kranj) and aims to guarantee an important continuing link between the project partners, also after the project end.

The output aims to give feedback on different partner initiatives and to create a sort of information and participation changing area in the form of an "energy help desk" where it is possible to share materials and involve other partners in own initiatives and events. The target groups are: citizens, property owners, investors, but also politicians and representatives of administrations and associations.
The production of the output was structured into different steps. The first one was to collect impressions, information and basic data. Some visits to EnSURE partners in 2010 and 2011 were organized by Agenda21Consulting. That was a fruitful opportunity to get to know the local framework, the partner reality and to share experiences. Moreover this first step was interesting to understand the strong and weak points of each partners' reality, to test the different contexts of Central European area and to study and organize at best next steps of EnSURE's activities.

After the partner visits each partner involved in that activity had to answer a short query and a database was produced collecting the information of the Info Points showing the update status quo of local energy Info Point. All these materials are available on the EnSURE website (www.ensure-project.eu/about-ensure/project-activities/energetic-refurbishment).

Thanks to the Partners' Vision Table the expectations were collected. EnSURE partners involved in this output declared that the first role of this network is to create strong synergies among all partners, to learn from each other and to exchange experiences. That is the main aspect of the output.

The EnSURE website becomes the key tool where all information and material on the EnSURE Network of Info Points is collected. The following table presents the partners' vision replaying the question: How do you imagine your Info Point and our Ensure Network of Energy Info Points in 2020?

After the local visits, the collection of many materials and the elaboration of ideas and visions, the Network of Energy Info Point was structured and started to work with a continuing involvement of partners in updating information both during the project time and after its end.

Partners' Vision table

Partners	Your Local Info Point in 2020	Ensure Network of Energy Info Point
LUDWIGSBURG	- members in the Energetikom network as well as further competence areas (e.g. the area of eco-design) are included in the network - a lively regional competence-centre - final and innovative location	- To learn from each other, exchange of lessons learnt - to create synergies - Contact point of the EnSURE-members, to pass on the lessons learnt and knowledge local to other cities and stakeholders, to install further info points and to include more stakeholders - there will be more info points connected to ours - The Ensure Energy info points will work in synergy. - There will be a constant exchange of experiences and news, also thanks to the common website - Information disseminated mainly through website platform/possibility to contact specialists and experts from other countries directly via internet communicators/joined educational/promotion actions
SOPOT	- Info Point open with an internet web site integrated with main web site of the Municipality - the creation of a Paper or electronic Newsletter	
KEK - Hajdúszoboszló	- An alive local Info Point - to create some influence on local energy issue	
GAL - Genoa	- In 2020 our Info Point will be active and better organized. - The Info Point will give information to citizens about regulation/laws at local, provincial, regional, national level, but will have more documentation about the European level.	
PRAGA - Warsaw	- Fully integrated into EnSURE Info Point Network	
BSC - Kranj	- link to the regional office for renewable energy - energy didactic project in schools or universities	

A key challenge in managing participatory processes is visibility and coordination. The info point brought forward by the project makes it possible to disseminate a series of activities related to information, awareness raising and participation.

A key challenge in managing participatory processes is visibility and coordination. The experience of the EnSURE project suggests to start from the info point to wow around these "places" a series of activities related to information, awareness raising and participation. Each Info Point can become a three dimensional square: the electronic square, the exhibition square, the civic square.
The first dimension (electronic square) can be an opportunity to combine face to face measures the electronic communication by implementing a web site, granting the presence of the energy issue in social networks and combining strategies of communication and participation online (forums, online polls,…).
When the Info Point implements the dimension of "square of fair or exhibition" the main task is to support the diffusion of experiences starting from a local network with already existing Info Points and the promotion of best practices and key experiences about energy efficiency and energy transition.

However the Info Point is also a "civic square" facilitating participatory processes driven by public administrations or civil societies promoting innovation on energy and a dialogue among stakeholders. So, Info Points have this third responsibility of becoming the civic square, the civic meeting point among social actors and local administration interested in changes toward sustainability.

Each Info Point can become a three dimensional square: the electronic square, the exhibition square, the civic square.

*7 *8 *9 *10 *11 *12 *13

8. Communication for Optimal Participatory Stategy

Communication is a vital factor of the success.

Communication is the optimal solution for the participation of the actors, as well as a vital factor of the success. In these cases communication has two major roles:

- to reveal the viewpoints of stakeholders, to find and ensure the favourable forms of their role and participation, and to utilize their activity in the project process,
- to attract new actors for the project and encourage them to participate.

Such planning processes require a complex and aligned communication process, which ensures all the participants of the importance and advantages of their collective work and displays the attractiveness of the project to the target groups via communication interfaces.

Balanced Relations between Demonstrative Actions and Remunerative Investments

The most important and very advantageous aspect of energy investments is their return. That is why communication and action-planning also needs interventions that help to demonstrate the economical solution. The importance of eye-catching, awareness raising and demonstrative actions that motivate participation in further projects has to be emphasized.

Sufficient Flow of Information between Actors: Traditional and Innovative Techniques

The key factor of efficient work is the creation of the "same eye level" of different actors who also need adequate information. Including "high level" and "low level" communication, such as person to person (P2P, craftsmen and inhabitants), education, newspapers, blogs, press conferences, training of craftsmen, newsletter, mailing lists, posters, display campaigns, local broadcasting (e.g. television, radio), open-day activities, presentation of best practices, energy efficiency quizzes, info points, etc.

Targeted Assistance – Multiple Tools for Different Actors

The different actions of the very different actors need a multivarious toolbar that significantly differ from each other. To explore and coordinate these elements we need the targeted assistance of the project management where the good example can get an important role.

Simple Indicators for Monitoring and Easy Conviction

For the comprehensive presentation of the advantages we need to create and communicate simple indicators. These elements have to ensure the widespread recognition of the project, which is the main objective. The progress (or the lack of it) also has to be visible. The difference between the results and the set objectives can either highlight incorrectly set objectives or inadequate operative steps.

During the process of the concept-planning the documentation appears in different forms. This documentation is the basis for the different communication materials, flyers, press releases.

Guidelines for Editing Documentations

During the process of the concept-planning the documentation appears in different forms. This documentation is the basis for the different communication materials, flyers, press releases.

Introduction

The introduction describes the aim of the project, its antecedents, circumstances that determine the planning process. It introduces the steps already done and the steps ahead of the planning.
The major task of the introduction is to raise the interest of readers towards other parts of the document. That is why it is short, its phrasing is usually positive, often uses a personal tone. It is favourable if a well-known person – for instance the mayor or a leading politician or an official of the city who is competent in the topic – presents the importance and usefulness of the case.

Executive Summary

The executive summary contains the most important results of the work in a few pages. It is usually prepared at the end of the work stages. The managerial evaluation does not necessarily summarize the different parts of the document to the same extent; it focuses on the elements that are indispensable for the further steps and it is about the maps of the case studies and their conditions. The analytical parts can usually be shortly summarized, but it has to construe clearly the necessary further steps, its organizational, personal and financial conditions, as well as including the main features of the economic returns.

Overview of the Current Situation and Evaluation

This overview stands for a clear exposition of the outcome of the analysis and evaluation of the actual circumstances. It focuses on the essential elements (that are important from the aspect of the concept) in terms of future advancement. It is worth analysing the capabilities and processes considering the useful potentials.

The presentation of the overview should strive for objectivity; it is also practical to confirm the factual statements with specific numerical data. During the evaluation process personal and subjective statements should be avoided, at the same time the given situation always has to be compared to something as far as possible. The selection of the point of reference always depends on the values of the community, other similar situations that are relevant from the point of objectivity. Taking into consideration that the results of the evaluation provide basis for further actions, the statements of the evaluation has to meet the qualities of the stakeholders. Its common tool is the SWOT-analysis which also has to reflect the common values.

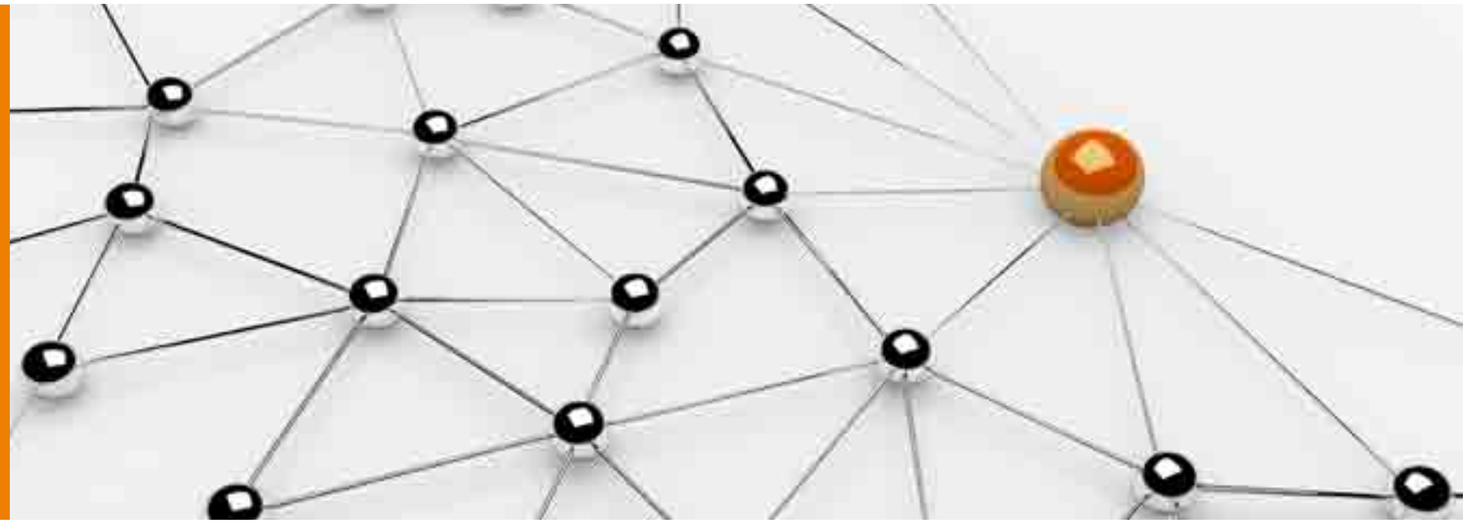
Main Goals

The comprehensive goals should always be implemented within the time period set in advance. In case of energy management and modernisation of districts we can plan as far as 10-15 years. On the other hand, actions for a smaller area can be realised faster and easier in a shorter time period due to fewer interventions. When formulating overall objectives, it is also important to use indicators and available indexes which can provide an overall picture of the size of planned actions and can be always compared with the initial state. These indexes are the basis for the monitoring of the process. In case of larger areas and more comprehensive goals a more complex approach is required. (For example the modernization of the energy consumption of a district can result statistically noticeable changes in the social composition, but when planning the results of the certain buildings the usage of such indicators is not usual, it is more expedient to use the direct technical-energetic standards.)

Strategy: Activities, Actors, Management, Timing and Finances

Introduction of the activities that are necessary to achieve the objectives can be expediently divided into three groups:
1) energy saving,
2) increasing energy efficiency,
3) the use of renewable energies.
The activities can refer to whole towns or to particular districts as well. The strategy's relevant element is the organisational background (often with different actors), the exposition of financial solutions and the summary of the communication strategy of actions especially with regard to the dissemination of the results. When formulating the strategy, the fact that the participants' main goal in such actions is to obtain financial advantages has to be considered. The implementation of actions where the return is not demonstrable (or where the duration is so long that it queries the credibility of the expected benefits) has much less chance.

9. Monitoring and Evaluating the Strategy: Key Tools and Indicators



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The ability to combine an energy transition strategy with the right time for change determine the pathway for successful interventions.

The setting-up of a monitoring and evaluation system is important because this way it can be verified whether the implementation is 'on track'. When the implementation process does not achieve its goals, it is important to understand why and where the process went wrong whether the policy-making process or the implementation was poorly planned (e.g. Was the problem analysis accurate? Were the objectives relevant and attainable? Was implementation involving the suitable parties? Is inadequate implementation due to weak organization capacity?). Monitoring and evaluation arrangements including data collection on the basis of carefully chosen indicators provide valuable information and help in defining how to optimize further interventions.

During the course of the planning phase of monitoring and evaluation arrangements, a distinctive attention should be given to the creation of core indicators of the main objectives. It is important to settle detailed indicators, monitoring and evaluation arrangements for all the possible alternatives considered. Indicators must be suitable for the purpose they are set for, i.e. measuring to what extent the objectives were achieved and whether the initiative was properly implemented. Consequently, their credibility and clarity are very important.

Was the problem analysis accurate? Were the objectives relevant and attainable? Was implementation involving the suitable parties? Is inadequate implementation due to weak organization capacity?

Another important factor while choosing indicators is the simplicity of how the relevant data can be collected; collecting data on an indicator should not be more costly than the value of the information provided.

Where a preferred option has been identified, you should:

1) describe briefly how the necessary data for the monitoring of the intervention's implementation and its consequences are to be collected;
2) outline the nature, frequency and purpose of subsequent evaluation practices.

Step 1: What needs to be monitored?

The first step is to consider exactly what needs to be monitored. Monitoring measures must be clearly linked to the energy concept:

- Objectives, targets and indicators developed for concept,
- Features of the energy/environmental baseline that will indicate the effects of the concept.

Monitoring needs to consider both positive and negative performances.

Step 2: What sort of information is required?

The type (quantitative or qualitative) and the level of detail of monitored information required will depend on the characteristics and level of detail of the concept.

Monitoring involves measuring indicators which may establish a causal link between implementation of the concept and the possible significant outcome being monitored.

When selecting indicators, consider how they will be analysed. Analysis of indicators may include:

- A change of indicators can be achieved through analysing groups of indicators together to create a profile of the issue which is measured;
- Baselines and predicted effects: Changes in the direction of indicators can be measured against the baseline position and predicted effects documented in the baseline report;
- Benchmarking may help in the assessment of relative performance. The best way to achieve is to establish a common set of core indicators;
- Use of qualitative and quantitative information: Monitoring of most indicators will be based on the collection of quantitative information, but there may also be a need to incorporate some qualitative information in the analysis for understanding;
- Interpretative commentaries: One task of analysis is providing a considered interpretation of the results. This may be presented via appropriate explanations and commentaries within monitoring reports.

Step 3: What are the existing sources of monitoring information?

Consider issues such as:

- What are the existing monitoring arrangements for other plans, programmes or projects within the authority, and if there is a scope for aggregating or disaggregating data to obtain any of the required information?
- Are there any available pieces of required information from other sources, e.g. at higher or lower level authorities or data sources used for establishing the environmental baseline?
- What organisational arrangements are necessary to carry out monitoring?

Step 4: Are there any required missing information, and how can these be complemented?

Additional information may be required to monitor those aspects which were selected in Step 1. The required information can be obtained in a cost-effective and efficient way which includes:

- Incorporation of new monitoring into existing performance monitoring for plans and programmes;
- Development of other existing monitoring systems to include additional parameters;
- Agreements with other authorities to standardise monitoring methods and share information.

Step 5: Who is responsible for the various monitoring activities, when should these be carried out, and what is the appropriate format for presenting the monitoring results?

During documentation of the monitoring strategy it is worth to consider:

- The time, frequency and geographical extent of monitoring (e.g. link to timeframes for targets; and monitoring whether the effect is predicted to be short, medium or long-term);
- Who is responsible for the different monitoring tasks, including the collection, processing and evaluation of environmental information;
- How to present the monitoring information with regard to its purpose and the expertise of those who will have to act upon the information (e.g. information may have to be presented in a form accessible to non-specialists).

A table could be a useful format for documenting how the monitoring process could be well managed, and might include information on:

- Monitoring activity to be undertaken;
- Responsibility for undertaking the monitoring;
- Schedule of monitoring process (dates and frequency);
- Presentation format of the information obtained;
- Status of monitoring and any problems encountered.

10. How do we EnSURE?

Success Stories of the EnSURE Partners and Pilot Investments














Raising awareness about energy efficient urban regeneration is one of the main aims of the Ensure project. We can only achieve this goal with a participatory approach, involving all the relevant stakeholders. Project stakeholders are defined as entities who are interested in the success of the project.

10.1 District Energy Development Plan - Ludwigsburg East District, Ludwigsburg, Germany.

City of Ludwigsburg, Department of Sustainable
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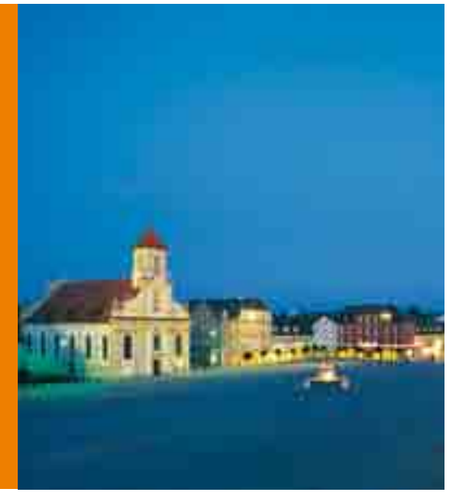

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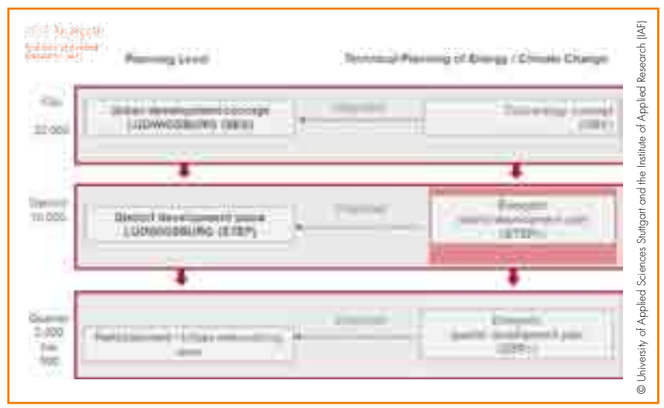
About the Organisation

The city of Ludwigsburg is situated in the Stuttgart region, one of the most prosperous regions in Europe. Ludwigsburg is a significant administrative centre with about 88,000 inhabitants. The municipality's activities are based on an integrated city development concept with principles and strategic objectives in 11 areas.

Aims

- Elaboration of an energy strategy for the eastern district of Ludwigsburg as a basis for energy efficient urban refurbishment.
- Development of an energy refurbishment concept for a post-war quarter in the eastern district, on the basis of the devised energy strategy.
- Elaboration of strategies to motivate and integrate owners and tenants, as well as key stakeholders such as energy providers, municipalities and housing companies.
- Identification of existing funding possibilities and development of appropriate financing concepts.
- Expansion of the integrated city development, especially in the field of energy, through European-wide collaboration within the EnSURE project.

Integration process of administrative city planning and technical energetic planning.



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Approach and Measures

Integration into Existing Overall Planning Concepts

On the basis of its integrated Urban Development Strategy, Ludwigsburg has devised a municipal energy and climate protection concept (Citywide Energy Strategy), which is currently implemented through numerous projects. Based on these existing overall planning concepts, the focus of the EnSURE pilot project in Ludwigsburg is the district and the quarter level. Furthermore the goal is to cross-link sectoral energy planning with integrated action plans (planning framework) at different planning levels.

Approach to District Development Plan

Firstly a detailed analysis of the eastern district is conducted, which includes aspects such as south-facing roofs, soil characteristics, district heating, settlement types, energy demands and ownership structures. In the next step energy-efficient potentials like solar installations, district heating, densification and refurbishment are determined. The results of the district development plan (STEPe) form the basis for defining a quarter with a high need for energy refurbishment.

Energy Quarter Planning

The selected quarter (Stadium Quarter) is a post-war quarter in the eastern district with a heterogeneous building structure and high potential for energy refurbishment. For this quarter an energy quarter development plan will be devised (QEPe). The rehabilitation concept includes refurbishment scenarios, a densification study, new concepts for the energy supply and implementation strategies.
The external expertise for the pilot project in the Eastern district in Ludwigsburg has been provided by the University of Applied Sciences Stuttgart and the Institute of Applied Research (IAF), which also carried out the described work product.

List of Stakeholders

The pilot project of EnSURE as well as the city development concept and the district development plans are coordinated by the interdepartmental Department for Sustainable Urban Development. In this unit, activities in sustainable urban development are brought together and organised in defined processes in order to link them with all areas of administrative action. This department breaks the existing linear structure of administration and is directly subordinated to the mayor. It must be involved in all decision-making processes that are related to sustainable urban development.

An important role is also played by Energetikom – a centre for energy competence and eco-design. The centre has the aim of bringing together stakeholders from the fields of energy efficiency, renewable energy sources and eco-design. An important stakeholder is also the municipal energy supply company Stadtwerke Ludwigsburg Kornwestheim GmbH (SWLB). For example, the SWLB owns the largest wood-chip-fired cogeneration plant in Baden-Württemberg, which covers 70% of the required district heating energy needs and supplies 3,000 households.

Target Groups

The following target groups can be defined for the Stadium Quarter:

- Young singles and couples renting units in multi-family houses (in some cases also home owners),
- Families with children, either home owners in single-family houses or home owners or tenants in an apartment in a multi-family-house ,
- Older singles and couples, either home owners in single-family houses or home owners or tenants in an apartment in a multi-family-house,
- Housing companies as key property owners who offer apartments for rent.

Results

As a result of the SWOT analysis in the east district, the quarter planning (Energy District Development Plan) will focus on building refurbishment, social balance and infrastructure and connection to the existing biomass-based district heating network, as there is great potential for quarters with high heat demand and the existing network is already close by. Additionally there is potential for photovoltaic panels, while geothermal and solar thermal support may be helpful to provide additional heating supply to the district heating network.

Furthermore refurbishment scenarios have been designed based on a 3D city model. The aim is to simulate heating energy demand and to compare it with the real consumption data of the Ludwigsburg public utility company. The parameters regarding building structure, insulation etc. have been analysed with respect to building type specifications and site observations. The simulated average annual heating energy demand of the stadium quarter is on average 155.12 kWh/m² per year, which is very high, as most of the building facades are not insulated.

Pilot area: Post-war quarter in the Eastern district.

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Based on the above data two different refurbishment scenarios (KfW 100 and KfW 70) have been devised. These standards have become accepted standards in Germany indicating the percentage of the maximum primary energy requirement specified by the EnEV (Energy Conservation Ordinance) that the houses actually consume. The level of CO2 emissions per square meter of living area is given in the diagram. The current situation of the buildings, without any refurbishment and with existing gas boilers, was taken as 100%. Each minus percent shows the possible savings from the existing situation.

Within the first scenario (KfW energy-saving house 100) the thermal improvement of the building envelope (insulation of the outer wall, insulation of the top and bottom floors, removal of thermal bridges) can be achieved. The heating energy supply can be provided by the district heating network. The refurbishment work will reduce heat requirements by 60%. Within the second scenario (KfW energy-saving house 70) further refurbishment work will be conducted, such as thicker insulation, whereby the heat requirement can be reduced by 70%. In addition to the refurbishment scenarios a densification study has been carried out (extension of storeys and new buildings).

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CO_2 equivalent (kg/m².a)		Refurbishment scenarios		
Current situation : 47,4		Current situation	KfW 100	KfW 70
Heat supply options	Gas (old boiler)	47,4	21,7	17,7
		-100%	(-54,2%)	(-62,7%)
	Gas (new condensing boiler)	39,9	18,3	14,9
		(-15,8%)	(-61,4%)	(-68,6%)
	District heating	38,8	17,8	14,5
		(-18,1%)	(-62,4%)	(-69,4%)

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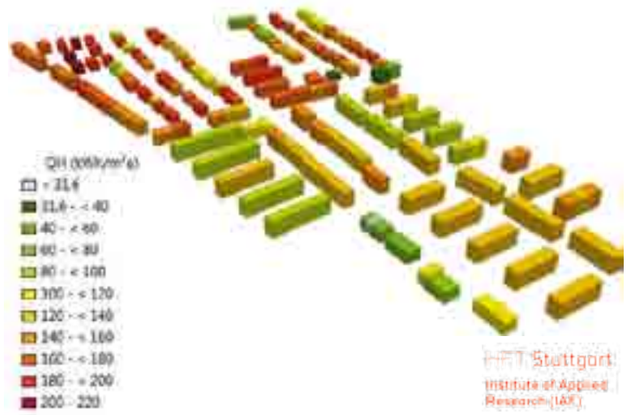
Annual space heating demand of each building in the Stadium Quarter based on HfT Stuttgart CityGML 3D City model



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Lessons Learned

- Cross-linking with the city-wide strategy (integrated Urban Development Strategy and Citywide Energy Strategy) has been a success factor.

- The iterative and integrated approach within the current development in the district (STEP) and the energy district development plan (STEPe) has been beneficial. In this way the EnSURE project can be linked to current work and the issue of energy can be discussed in the context of other topics such as urban redevelopment measures, mobility, infrastructure, shopping possibilities and leisure facilities. As a result conflicts of objectives can be explored and rehabilitation measures can be implemented within an integrated approach.

- 3D city quarter modelling (on the basis of GIS) can be a very good basis for rehabilitation standards and an essential tool for energy planners (such as allowing automatic calculation of the heating energy demand of existing building stock), enabling them to plan and coordinate low-carbon urban energy strategies by decreasing building energy demand and extending sustainable energy supply concepts. The common heat generation and distribution system is a success factor, because a large number of consumers can be included, leading to decreased expenditure and increased energy efficiency.

- Early involvement of key-stakeholders (e.g. the public utility company) in the rehabilitation process brings key benefits. Furthermore, addressing key property owners such as housing associations as well as private owners and local actors is important at the beginning of the implementation process as a means of motivating them for energy refurbishment, because they have a high proportion of residential units and the ownership structure allows for building densification and extension.

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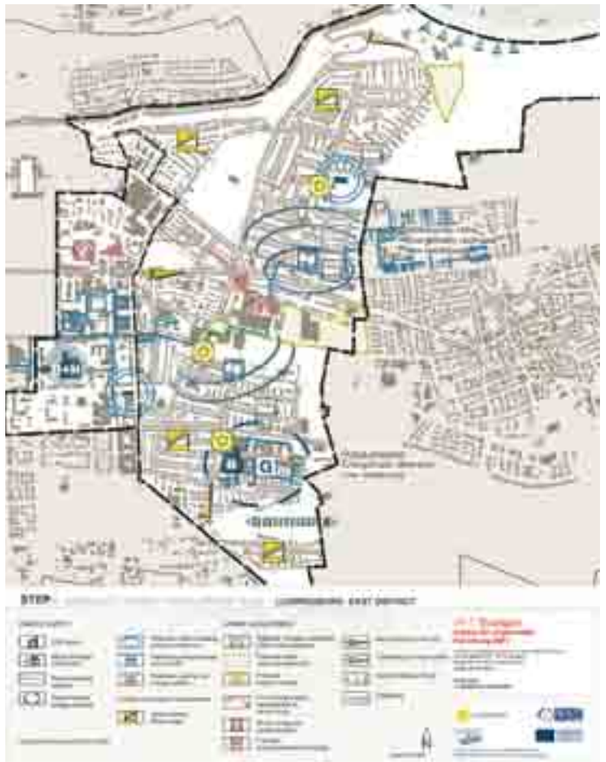
Strengths and opportunities



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Pilot area: Post-war quarter in the Eastern district.

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Eastern district Ludwigsburg.

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10.2 “Intelligent Condominiums” and Info Point – Genoa, Italy.

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First pilot case of “intelligent condominiums” in Piazza della Vittoria in Genoa.

About the Organization

Since the year 2000, the development agency has been concerned with sustainable growth in the area around Genoa, Italy. The core business of the company is represented by its ability not only to create and manage development projects, funded one at a time, by tenders at either European, national or regional level, but also to create operative networks and partnerships developing activities locally.

Aims

The main objective of the EnSURE project at a local level is to save energy and protect the environment by the requalification of private buildings. In particular this means:

1. Promoting concrete and innovative actions in order to reduce residential energy consumption in urban and rural areas,
2. Increasing the energy share produced from renewable sources in line with the commitments undertaken at a national and European level.

The planned steps to achieve the objective were:

- A status quo analysis of the current situation in Genoa and its province,
- The implementation and evaluation of the pilot project,
- The establishment of an Info Point to provide information and support (on a technical, design and administrative level) for citizens or companies wishing to develop systems aimed at energy savings or the use of renewable energy sources,
- The involvement of residents and relevant local stakeholders in the urban regeneration process in participation and information activities,
- A contribution to the transnational guidelines for the participation process.

Approach and Measures

Implemented measures and actions:

- Analysis of previous experiences in the region,

- Analysis of physical and technical characteristics and the quality of energy infrastructures in Genoa,

- Survey of local residential demands,

- Cost/benefit analysis,

- Elaboration of organization chart,

- Selection of the pilot project “Intelligent Condominiums”, involving:
  - Saving energy and protecting the environment through the requalification of private buildings
  - Supporting economic development and household budgets and assisting building and plant contractors so that they can requalify condominiums using energy service companies (ESCos)
  - Performing interventions to improve energy efficiency in buildings, by removing the risk of the initiative and freeing the end customer from any organizational burden and investment.

- The creation of an energy Info Point entitled “Provincial Desk for Renewable Energy and Energy Saving” with the aim of allowing the development of renewable energy sources in the province and promoting a culture of efficient energy use.

- The Desk aims to provide information and technical, planning and administrative support to citizens or businesses wishing to develop systems aimed at energy savings and thus at the use of renewable energy sources.

Site inspection in Corso Firenze in Genoa.

© Barbara Gatti

List of key actors

- Province of Genoa,
- Chamber of Commerce of Genoa,
- Bank, MUVITA Foundation,
- AERE Association (Association of Environmental and Resource Economists),
- Info Point “Provincial Desk for Renewable Energy and Energy Saving”,
- GAL Genovese Development Agency.

List of Stakeholders

- Liguria Region,
- Municipalities,
- Condominium associations,
- Builders,
- Installers,
- Condominiums administrators,
- Associations of owners and tenants,
- Professional orders.

Target groups

The target groups are as follows:

- Citizens,
- Property owners,
- Investors,
- Politicians,
- Representatives of administration associations.

Financial Instruments

In order to support energy service companies in obtaining the substantial financial resources necessary for this specific project and in particular for the pilot case of the condominium in Piazza della Vittoria, the “Impresapiù” financial instrument was proposed (provided by the Province of Genoa and the Chamber of Commerce of Genoa to facilitate credit access for small and medium sized enterprises in the province). It was therefore decided to allocate part of the total “Impresapiù” guarantee fund to the testing of interventions aimed at energy saving.

The methodology aims to provide a guarantee for energy service companies in the field of the energy redevelopment of residential buildings in the Province of Genoa in order to guarantee the risk taken at first instance by Confidi (80%). In turn Impresapiù counter-guarantees 90% of the Confidi guarantee.

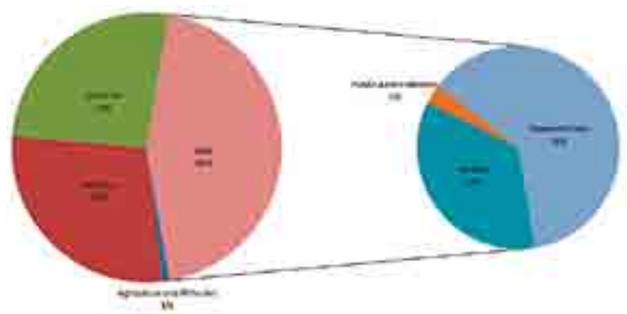
Lessons Learned

Successful elements:
The condominium operations would be an extremely interesting opportunity for companies and groups of smaller companies, such as the vast majority of construction companies and local facilities, which are also experiencing a time of severe economic difficulties due to the current economic situation and for which this project offers significant employment opportunities.

Elements of weakness:
Difficulties of practice management with the bank; high bank fees.

Definition of a standard procedure for diagnosis in order to remedy the weaknesses that emerged it was decided to carry out energy audits with the aim of identifying a suitable and specific methodology for the preparation of the energy diagnosis. Following the definition of that methodology it will be possible to provide companies with a “standard” address for the implementation of energy diagnosis.

CO2 emissions by Sector (2005) in CO2 t/year



Site inspection in Arenzano (top) and Campo Ligure (below).

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Site inspection in Campo Ligure.

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10.3 Rehabilitation Concept for a Standard Industrial Site, Including Rehabilitation of Existing Industrial Buildings and a Wider Use of Alternative Energy Systems – Ferrara, Italy.

S.I.PRO. Agenzia Provinciale per lo Sviluppo SpA
Settore Promozione Economica e del Territorio
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© Sipro

SIPRO's photovoltaic plant in the industrial site of S. Giovanni di Ostellato.

About the Organization

SIPRO is the local development agency of Ferrara, Italy. Active since 1975, its shareholders are the Province of Ferrara, the 26 municipalities of the province, the Chamber of Commerce and three banks. The agency's mission is the enhancement of economic development by offering sustainable industrial estates, supporting enterprises and offering technical assistance to public administration in all the development processes.

Aims

The objective of the project was to outline a technical study for the improvement of industrial site energy performance. This was implemented by means of adopting a twofold methodology: on the one hand the focus was to enhance corporate energy performance (mainly industrial buildings), whereas on the other hand the aim was to define an Energy Programme for the industrial site.

Approach and Measures

The project was structured into three main sessions resulting in an Energy Programme for industrial settlements:

1) The initial energy analysis included the identification of the energy needs of the overall industrial site, considering the following points:
- Use factors, i.e. mainly the energy needs arising from the production cycles of the businesses on site, the type of industrial buildings, and the heating and cooling systems adopted.
- Bad practices causing energy waste.
- The energy sources used.

2) Measures for the energy enhancement of some industrial buildings were identified for five out of 27 businesses which were chosen as samples of the businesses located on the industrial site:
- A multinational company working in the automotive sector,
- A medium-sized chemicals company,
- A small textile company,
- A bio remediation company,
- A plastics and chemicals company.

Several on-site visits were conducted and data on production and the plants' systems was collected and analysed. The final outcome was the definition of five energy audits.

3) An Energy Programme was defined for the overall industrial settlement. For each action identified, a cost-benefit analysis was outlined, thus assessing the financial sustainability of the intervention and the economic advantages for the businesses involved. Finally, the environmental benefits were assessed.
An energy analysis and an energy enhancement plan were implemented based on the results of:
- The corporate energy audits implemented,
- The PV plants recently built on the site by SIPRO,
- The main site's energy uses (public lighting, depuration plant, water treatment plant),
- Estimates of the energy use of all the companies located on the site.

List of Stakeholders

- SIPRO,
- Regional and local authorities,
- SME associations,
- Authority for electric energy and gas (AEEG).

Target groups

The action is focused on industrial sites and SMEs located there.

Financial Instruments

The project implemented within EnSURE is part of a wider project, related to national and regional laws linked to the concept of "Eco-Industrial Parks". These are defined as "technologically and environmentally equipped industrial sites" (= industrial areas which, via a Managing Authority, succeed in ensuring the availability of services and infrastructures, making enterprises thrive while reducing the impact on the environment), which were established by Art. 26 of National Decree 112/98.

The decree states that regions and local administrations are to define laws to establish this kind of industrial settlement. Additionally, this type of site, equipped with infrastructure and systems aimed at preserving and protecting health and the environment, are intended to enable existing firms to obtain collective licences for shared services. Currently several regions are implementing the legal framework, although the process is quite complex and requires time.

Emilia Romagna Regional Law 20/2000 and the Regional Technical Act 2007 establish the need to promote the idea of Eco-Industrial Parks in the industrial development of the territory. The idea is to support sustainable industrial settlements, where energy efficiency and renewable energy use are central issues, together with distinct environmental services which are to be provided by the industrial site's Managing Authority.

The main source of finance for establishing Eco-Industrial Parks is regional funds and ERDF funds (defined in the regional operative plan). In our case SIPRO was appointed as the industrial site's Managing Authority, which means that the agency invested in the installation of photovoltaic plants (9m Euro) on three industrial sites (one of which is the chosen pilot site for the EnSURE project) and will be partially financed by its revenues.

SIPRO was identified as the site's Managing Authority and a Committee of Stakeholders was established (consisting of local authorities, SME associations, Chamber of Commerce).

Business incubator in the industrial site of S. Giovanni di Ostellato and concentration Photovoltaic plant.

© Sipro

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Aerial view of the pilot industrial site of S. Giovanni di Ostellato.

Results

The main results are the corporate energy audits and the Site Energy Programme, both representing a model to be adopted further by the remaining businesses located on the site and by other industrial sites. Moreover, it offers expertise which might be transferred to the management of other industrial sites in Italy or in the EU. As far as the Emilia Romagna region is concerned, this is in fact the first step in a process which should be adopted in all the other regional sites identified to become Eco-Industrial Parks.

Specific results are the five corporate energy audits, applied to different sectors of activity, and a detailed path for the definition of a site Energy Programme.

The diagnosis has revealed the need for some priority actions:
- The need to improve energy-related behaviour,
- Energy rationalisation of diverse systems (e.g. cooling systems),
- Variable-speed drive (VSD),
- Implementation of an energy management system (ISO 50001).

Lessons Learned

- Definition of a process for the implementation of energy audits with the aim of improving businesses' performances,
- Awareness-raising among workers,
- Importance of creating opportunities to build a consensus and take action for more effective governance of energy management in industry (for political stakeholders),
- Need for greater access to information and advice for businesses (e.g. detailed data on the payback periods and the advantages of some technologies and new trends).

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Cromital company, settled in the industrial site of S. Giovanni di Ostellato.

10.4 Energy Savings in Urban Quarters through Rehabilitation and New Methods of Energy Supply – Faenza, Italy.

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© Municipality of Faenza

About the Organization

The Municipality of Faenza is a local public authority with a long tradition of managing urban development and participation in European Union programmes with special attention to sustainable development.

The city's organization has two different tiers. The local government or political level is headed by the mayor, who is directly elected by the citizens and supported by the members of local government. This tier is in charge of defining and detailing the general objectives and goals of the city. Secondly, there is the administrative structure, which consists of nine sectors, each of them led by a different head of department, whose aim is to implement the legislative programme of local government.

Aerial photo of Ponte Romano District.

© Municipality of Faenza

Aims

The participation of the Municipality of Faenza in the activities of the EnSURE project aimed to achieve the following:
- The development of a Strategic Plan consisting of a concept for energy efficiency in the public and private building sector and the use of renewable energy sources (Strategic Energy Efficiency Plan for the Building Stock) and a new Municipal Building Code (in progress) consisting of a set of regulatory provisions and incentives for the development of energy and environmental sustainability.
- The implementation of an energy revitalisation pilot project in a social housing district named "Via Ponte Romano" (1958) representative of Faenza's building stock.

Approach and Measures

The definition of a Strategic Energy Efficiency Plan for the Building Stock included the following steps:

Analysis of the regulatory context

Analysis of the regulatory context at all levels and the recognition of national and international best practice in urban energy efficiency promotion and urban planning instruments involving provisions on energy efficiency in buildings.

General energy balance of the Municipality of Faenza:
- Development of a city database for energy consumption, production and CO2 emissions referring to the year 2010,
- Development of a city database for consumption, productions and CO2 emissions of the buildings located in the urban area referring to the years 2005 and 2010,
- Comparison of the results with the 2020 European targets on emissions control in the building sector.

© Municipality of Faenza

Detail of the Faenza's marketplace.

Energy efficiency building mapping and "zoning" of urban energy consumption (implementation of an energy accounting tool):

- Energy classification and mapping of the existing building stock based on the (estimated) energy performance index of each building and totalling of specific consumption data for each homogeneous area of intervention.

Improvement scenarios assessment:

- Business as Usual Scenario (BAU): trend scenario not including improvement actions,
- Definition of the Action Plan structured into three different areas of intervention (regulatory actions included in the new Municipal Building Code, actions to be carried out by the city administration itself, changes to local tax system),
- With Measure Scenario (WMS): trend scenario including improvement actions.

The energy revitalization process of the Via Ponte Romano district included the following steps:

- Assessment of the general needs of the Social Housing Agency (ACER) and its users,
- Analysis of the status quo: analysis of current energy requirements and comparison of the results with the regulation in force (Regional Law),
- Definition of intervention strategies: identification of a set of technical actions aimed at the achievement of the performance level requested by residents and the social housing agency, (ACER) fulfilling regional legal requirements and accounting for local climate conditions,
- Cost/benefit assessment of the intervention strategies: assessment of benefits, costs and the pay-back time of the initial investment.

List of Stakeholders

The stakeholders from the Municipality of Faenza directly committed (direct stakeholders) to the implementation activity of the EnSURE project were:

- Municipality of Faenza,
- EnSURE project consultants,
- ACER (Social Housing Agency),
- "Permanent comparison round table" (a round table composed of architects, engineers and heating engineers or technicians who operate in the territory of Faenza),
- Institutional partners such as Confindustria, economic associations, professional orders,
- HERA (local supplier of electricity and gas) and its energy service company Bryo.

The beneficiaries (indirect stakeholders) of the project implementation activity and results are:

- Residents owning properties in the Municipality of Faenza and building administrators; residents in buildings of the pilot project of the Via Ponte Romano district.

Target Groups

Direct stakeholders were involved in the definition and elaboration of the project actions through "front" meetings and technical "round tables" (permanent technical committees). Institutional partners and professional association were involved through a thematic round table on energy efficiency as part of the general participation laboratory for the new Municipal Building Code. The public was informed about the results through the local press and the administration's magazine (Faenza e mi paes). Additionally, a brochure was published dedicated to the results of the pilot project (the energy-saving retrofitting project of a social housing district – Via Ponte Romano).

Results

The Strategic Energy Efficiency Plan for the Building Stock enabled the participants to:

- Determine the energy consumption and the CO2 emissions profile of the Municipality of Faenza with a specific focus on the building sector,
- Define actions for improving the energy efficiency of the building stock, taking into consideration the cost/benefit ratio,
- Introduce in the new Municipal Building Code (in progress) standards for energy and the environmental sustainability and requalification of buildings based on energy-saving criteria stricter than those fixed by regional regulations,
- Test an energy requalification process for a social housing district (Via Ponte Romano district), representative of Faenza's building stock, and to assess a set of technical improvement solutions and innovative methods of power supply in consideration of the climate conditions in the area.

Further results:

- The development of a Strategic Plan enabled a set of regulatory provisions and incentives for the development of energy and the environmental sustainability of existing buildings to be included in the new Municipal Building Code (in progress).
- The pilot project (Via Ponte Romano district) has shown the benefits, in terms of the reduction of consumption, gained by interventions on the building enclosure (walls, roof and flooring in unheated areas).
- The new Municipal Building Code (in progress), as required by regional law, represents an important opportunity to introduce activity provisions into building process management aimed at promoting energy efficiency and the use of renewable energy sources.
- The actions/measures identified from the Strategic Energy Efficiency Plan for the Building Stock will allow a 13% reduction in emissions in Faenza's building stock in accordance with European Decision 406/2009/CE (With Measure Scenario – WMS)
- In order to achieve the expected objective within the Development Strategy Plan (-20%), it is necessary to modify the local tax system (cumulative with already existing tax incentives at a national level) aimed at supporting the energy improvement interventions on the building's enclosure (walls, roof and flooring in unheated areas) and on technological systems.
- The direct involvement of stakeholders is essential for the implementation of the provisions included in the Strategic Energy Efficiency Plan for the Building Stock.
- Citizen involvement is crucial for an extensive implementation of the Strategic Plan.

Ponte Romano district seen from the river park.

© Municipality of Faenza

Lessons Learned

The Strategic Energy Efficiency Plan for the Building Stock led to the following results:

- European targets for CO2 emission reduction – seen as the reference framework in the Development Strategy Plan of the Municipality of Faenza – cannot be achieved through national and regional regulations (Business as Usual – BaU scenario).
- The Municipality of Faenza has to take additional measures to target the Development Strategy Plan's goals.

The energy efficiency building map of the urban area of Faenza

10.5 Energy Savings in Urban Quarters through Rehabilitation and New Sources of Energy Supply – Debrecen, Hungary.

Eastern-Hungarian European Initiations Foundation
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www.kekalapitvany.hu

© Arányász János

Energetic ENSURE exhibition stand at a city festival in Hajdúszoboszló.

About the Organization

The Eastern Hungarian European Initiations Foundation is a non-profit organization for public benefit. It implements innovative solutions in many fields such as business, education, training, expertise and consultancy. The aim of the founders was to connect non-profit and for-profit actors who work in the field of spatial and regional development. The company's mission focuses on the promotion of effective links between public authorities, the academic sector (research and education), enterprises and civil society actors in order to bring their capacities together for the purpose of comprehensive territorial development. The foundation has successfully cooperated in numerous transnational activities and projects, mainly in the field of energy, social and cultural issues, civic affairs and organizational development movements.

Aims

The main aim of EnSURE is to enhance the energy performance of urban structures by applying integrated approaches to energy-efficient urban development at the district level. Its strategic objective is to involve residents and relevant local stakeholders in the urban regeneration process through participation and information activities. A further aim is to develop transnational strategies to support the implementation of EU goals for energy efficiency at local level.

Approach and Measures

The focus of the project was the municipality of Hajdúszoboszló in eastern Hungary. The most important energy features of the focus area were examined and the energetic needs and attitudes of local residents were surveyed. The result was a complex picture of energy issues. The organization participated in the preparation of different intervention strategies and action plans to change and direct energetic renewal. A special methodology was defined in order to raise awareness of energetic issues. The organization joined the international network of Energy Info Point, within which it established a local Info Point. A model for "energy smart buildings" was devised and guidelines were prepared to give guidance to pilot activities. The organization was involved in shaping the energetic renewal of local residential and public buildings.

List of Stakeholders

EnSURE's project partners and stakeholders have an important role to play in the promotion of energy efficiency and the increasing use of renewable energies. The most important partners are the Municipality of Hajdúszoboszló and its institutions, the University of Debrecen (students, lecturers), the ENEREA Észak-Alföld Regional Energy Agency, 5-10 civic organizations with different profiles, and some private organizations with special expertise.

Energetic awareness raising presentations for children in Hajdúszoboszló.

© Arányász János

Target Groups

Direct stakeholders were the local municipality, NGOs, building contractors, the University of Debrecen, energy suppliers, local citizens and proprietors.
There were also indirect stakeholders such as media interest groups, politicians and citizens interested in energy issues.

Financial Instruments

The project was co-financed by the European Union, the Hungarian government and the foundation itself. The most important costs were staff, administration, meetings, events, travel accommodation, equipment and investment. On the basis of the project results a private financial instrument scheme was developed to foster energetic change and renewal.

Results

The project managed to realize almost all of its objectives. Energy studies and plans will help to direct energetic renewal locally. Energy-related interventions such as publicity and the Info Point will help to raise awareness of energetic issues and support innovative approaches and better energy management schemes. The project has also developed new methodological and scientific competences which will help academic and civic organizations to promote energy-related activities.
The most important achievements are the sustainable energetic renewal action plan and admission to the Covenant of Mayors. Methodological innovation such as awareness-raising strategies, indicators and guidelines for smart buildings and diverse feasibility studies will form the basis for local and regional energetic renewal.

Lessons Learned

A major achievement is the close cooperation between project partners in the European Union, which allowed for the development of a transnational approach to energetic renewal. Key successes were achieved in SEAPS, awareness-raising methodologies, energy attitude surveys, and guidelines and criteria for energy smart buildings. There was a pleasant atmosphere at all meetings and debates at international events, which were also very productive. One disappointment, however, was the missed opportunity of implementing a local energy refurbishment pilot project.

Poster visualising the infopoint`s function.

© Open Media Consulting Kft.

10.6 Energy Rehabilitation of Historic Building in Old City Centre of Kranj Using Renewable Energy Sources – Kranj, Slovenia.

BSC- Business support centre l.t.d. Kranj
Regional development agency of Gorenjska region
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© Municipality Kranj

About the Organization

BSC Business Support Centre Ltd. Kranj is similar to a public body with a non-profit status, mainly established by local communities, municipalities and chambers of trade / commerce. Since 2000 it has had a nationally approved and confirmed status, and plays an important role in the tasks of the Regional Development Agency of the Gorenjska region. BSC's main task is coordinating the organisation and implementation of the development programme and the strategic priorities of the region in line with the regional decision body (Regional Council of Gorenjska).

Aims

- Ensuring the energy efficiency of protected public buildings in the old city centre of Kranj, assessing the potential for the use of renewables in old protected city centres and defining guidelines for the use of renewables in old city centres.
- Establishing a regional Info Point for renewables and energy efficiency with awareness-raising activities.

Pilot building.

© Business Support Centre Kranj

Approach and Measures

The main objective of the project was to assess and analyse the potential for the use of renewables and energy efficiency innovative measures in old protected towns.

BSC carried out a cost efficiency analysis of renewables for the selected towns, prepared pilot investment, conducted a feasibility study for public buildings in old city centres and devised technical documentation for pilot investments. On the basis of the technical documentation, the measures were implemented in a public building "Sejmišče" using renewables.

The project was based on an innovative approach to the use of renewables that had not been applied to old protected buildings so far. The approach made it possible to reduce energy consumption and will be used as a pilot example of energy efficiency in protected buildings. The building will be opened to the public as a good example of how to improve energy efficiency and use renewables in old protected buildings. Additionally, the technical documentation is also a good starting point for informing the public and experts about the use of renewables in old city centres. Further, a document was produced outlining an energy strategy for old city centres in Gorenjska at a district level, which constitutes the key document for future measures in the field of energy efficiency and renewable energy in old city centres in Gorenjska.

© Business Support Centre Kranj

EnSURE team in lake Bled.

EnSURE meeting in Kranj.

© Business Support Centre Kranj

List of Stakeholders

Public sector:
Local communities in the Gorenjska region, Regional Institute for the Protection of Cultural Heritage, local energy agency of Gorenjska

Private sector:
Residents interested in renewables and energy efficiency, experts and companies dealing with energy efficiency and renewable energy

Target Groups

- Owners and residents of protected buildings interested in renewables and energy efficiency,
- Experts and companies dealing with energy efficiency and renewables that are interested in developing innovative approaches for protected buildings,
- Local community officials dealing with issues, measures and investments in renewables and energy efficiency in old city centres,
- Key political decision-makers who wish to encourage the use of renewables and energy efficiency in old city centres.

Results

- The energy strategy at a district level produced proposals for key future measures in the field of energy efficiency and renewable energy in old city centres in Gorenjska including proposals for SEAP measures.
- The feasibility study also provided good input for the future improvement of energy efficiency and use of renewables in old city centres.
- The energy rehabilitation of a protected building "Sejmišče" using renewable energy sources can be regarded as good practice for the improvement of energy efficiency.
- The Regional Info Point improves awareness and provides high-quality information on renewables and energy efficiency for residents and companies.
- Stakeholders upgraded their information about renewables, energy efficiency, SEAP and possible use of renewables in old city centres, which might form input for future upgraded support measures.

Lessons Learned

- It is very important to assess the different possibilities, technologies, data and expertise for energy efficiency and renewables before the investment.
- It is also important that use of the public building for different public purposes is agreed before the planned investment.
- Possible investment and its consequences also have to be checked with regional institutions for its impact on cultural heritage.
- It is necessary to plan investment and measures, especially in old protected buildings, with great care and in a step-by-step approach.

Inside of pilot building.

© Municipality Kranj

10.7 Rehabilitation of a Selected Residential Building with a Demonstration Effect of Using Solar Energy – Warsaw, Poland.

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www.rsmpraga.pl

© Leonard Karpiłowski

RSM PRAGA – residential buildings.

About the Organization

RSM "PRAGA" has been operating since 1970 and is structured into six administrative units with 215 apartment buildings and 11 commercial buildings. It administers 16,629 apartments and 448 commercial premises (total apartment space: 862,072 m²; total usable space: 51,067 m2; number of residents: approximately 50,000).

RSM "PRAGA" also constructs apartment buildings and conducts social and cultural activities.

Aims

- Analysis of the physical and technical characteristics and the quality of the infrastructure of the building stock in order to evaluate its energetic condition,
- Distributing information on energy saving and renewable energy sources (RES),
- Informing about energy efficiency,
- Feasibility study of energy conservation for residential buildings and business premises,
- Rehabilitation of a selected residential building with a demonstration effect by using alternative energy sources (solar installation),
- Technical documentation and evaluation of the pilot investment.

Approach and Measures

- Organization of family picnics for residents of buildings administrated by RSM "PRAGA",
- Demonstration of ways to save energy, presentation of RES, games and quizzes for children on energy-saving subjects,
- Market research on solar installations; learning about different systems and types of solar installations,
- Participation in events and conferences connected with RES and environmental protection,
- Establishment of an Info Point on energy saving,
- Implementation of a solar installation on a residential building.

List of Stakeholders

- WFOŚiGW (Voivodeship Funds for Environmental Protection and Water Management in Warsaw),
- Mazowiecka Agencja Energetyczna (Mazovian Energy Agency),
- Instytut Energetyki Odnawialnej (The Institute for Renewable Energy EC BREC IEO),
- Krajowa Agencja Poszanowania Energii (The Polish National Energy Conservation Agency),
- Europejskie Słoneczne Dni (European Solar Days).

Target Groups

- Tenants of residential buildings administered by RSM "PRAGA",
- Other cooperatives which are in charge of residential building administration.

Solar Panels (Śreniawitów 12).

© Paweł Urbański

Results

- First implementation of a solar installation in a building which is administered by RSM "PRAGA",
- Further solar installations depending on the results of the pilot project,
- Distribution of information on RES among other building cooperatives.

The project focuses on the implementation of renewable energy sources in existing older building stock. Its aim is to combine modern technology with older heating systems in the best and most effective way.

Lessons Learned

- The implementation of a solar heating system in a building from the early 1980s was successful.
- The administration of the residential area agreed to install a solar system (despite their initial scepticism).
- Information on alternative heating sources was exchanged with other building cooperatives.
- The subject of the pilot project was changed from a 65-apartment building to a 20-apartment building because the budget was not high enough.
- Information on the project and RES was published in the press and distributed among other organizations in the Cooperative Association.

Annual Energy Consumption Index (2010)

Energy Performance Card.

Stationary Info Point.

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© Leonard Karpiłowski

RSM Praga – residential buliding.

10.8 Energy Rehabilitation of Historic Music School in Sopot Using Renewable Energy Sources – Sopot, Poland.

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www.sopot.pl

© J. Bartkowski

The historic music school in Sopot, under the supervision of Voivodeship Conservator of Monuments.

About the Organization

Sopot City – called 'the summer capital of Poland' – is a small but very popular spa resort on the Baltic Sea, adjacent to Gdańsk and Gdynia, in the centre of the almost one-million Tri-City conurbation located in the Pomeranian province. It is visited by over 820,000 tourists each summer.

Since 1823, Sopot has been known as a spa resort thanks to its exceptional natural advantages and landscape such as forests and parks covering over 60% of the city area, clean and sandy beaches stretching along the 4.5 km of Sopot's shoreline, and its unique microclimate conditions with abundant spa water resources.

Aims

- Enhancement of the energy efficiency of a local public building (energy rehabilitation of the historic Music School in Sopot using renewable energy sources (RES) and energy certificates of thermo-modernized schools and the library in Sopot)
- Supporting integrated and sustainable urban energy development and planning
- Evaluation of previous local activities and current status in the field of energy efficiency
- Raising public awareness of energy saving and RES implementation by promoting good practices (pilot thermo-modernization of a historic building) and creating an energy Info Point in Sopot

Approach and Measures

The general objective of the project was to analyse opportunities to improve energy efficiency in the City of Sopot and to implement pilot investment with innovative technologies such as renewable energy sources.

In the framework of the project the city of Sopot prepared technical documentation (energy audit, conservator programme with guidelines and concept for energy rehabilitation) for pilot investment in Sopot Music School. The technical solutions which were adopted (photovoltaic panels) are not commonly used and untypical of the city's historical buildings and listed monuments. At the local level, public buildings are just beginning to implement RES such as solar panels and heat pumps to support energy delivery, but none has been a historic building. The pilot thermo-modernization of Sopot Music School is an example of good practice in using RES in listed historic buildings.

In addition to the reduction of energy consumption in the school, the pilot project aims to present innovative ways of using RES to a wider public and to show how to improve energy efficiency by using traditional methods like thermal insulation. The outlined measures are important due to the historic nature of the building, which does not permit the walls to be insulated from outside.

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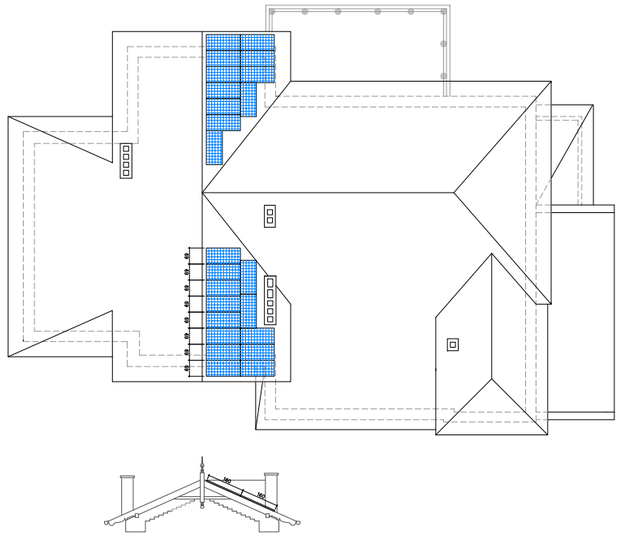
Project sketch of the photovoltaic system



In addition to raising public awareness of energy efficiency, energy certificates were elaborated for nine public educational buildings that were thermo-modernized in the years 2009-2010. The results from energy certificates show that most of the thermo-modernized buildings achieved a high level of energy savings.

In order to improve local access to information on energy efficiency, an Info Point was created in Sopot which provides comprehensive and integrated information on good practice in energy saving, thermo-modernization and RES financing.

As an additional measure, the "Energy policy of the City of Sopot" was developed. This document contains the "Estimation of the level of reduction of greenhouse gas emissions and energy efficiency in Sopot (1990-2010)", as part of which the following measures were taken:

- Examination of the local power supply system,
- Analysis of previous activities and a foundation project for planning heat supplies,
- Analysis of electricity and gas supplies for the Municipality of Sopot.

In addition, the current and expected changes in the following areas were assessed:

- Demand for heat,
- Electricity and gas supplies,
- Identifying projects that rationalize the use and potential capabilities of renewable energy sources in the city.

The Energy policy of the City of Sopot helps to determine directions for local sustainable energy development and enhance energy efficiency.

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List of Stakeholders

Private sector:

- Energy auditing company,
- Project design company,
- Conservation service,
- External advisors.

Public sector:

- Pomorskie Marshal's Office,
- Pomorskie Voivodeship Heritage Conservator,
- The Mayor of Sopot,
- City Council of Sopot,
- Municipal Heritage Conservator,
- Engineering and Environmental Protection , Department
- Strategy Development Department,
- Finance Department,
- Investment Department,
- Architecture and Urban Planning Department,
- Education Department of the City Hall of Sopot,
- The Sopot Music School and other local educational institutions.

Others:

- Heat Supply Company (ORCHIS)

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Renovation and restoration of the original veranda.

Target groups

- Citizens and private owners of estates are informed about the financial and technical possibilities of energy efficiency,
- Administrators and users of public buildings are encouraged to adopt energy efficiency solutions and energy-saving approaches,
- Local and regional authorities are involved by implementing project recommendations for local energy and urban development policy.

Results

- Determination of directions for sustainable energy policy development and assessment of the level of reduction of greenhouse gas emissions and energy efficiency in Sopot and its implementation by the city council.
- Assessment of current and expected changes in demand for heat, electricity and gas, identifying projects that rationalize their use. The potential capabilities of renewable energy sources will support strategic goals such as increasing energy security in the city.
- Improved local access to information on energy efficiency, good energy-saving practices and financial instruments supporting the implementation of RES and energy-innovative solutions (promotion of the energy rehabilitation of the historic Music School in Sopot using renewable energy sources and results of the pilot investment, evaluation of energy efficiency in thermo-modernized public buildings by energy certificates and opening an energy Info Point in Sopot).
- Reduction of energy consumption and CO2 emissions by implementing the pilot investment (energy rehabilitation of the historic Music School in Sopot using renewable energy sources).
- Increasing the share of RES in energy production (installation of photovoltaic panels in the pilot investment).

Lessons Learned

- An analysis of the profitability of RES and the increased energy efficiency of the building before investment is beneficial, especially in case of listed historic buildings.
- Before elaborating an energy audit for historical buildings, the opinion of the Heritage Conservator on RES should be sought to avoid unnecessary prolongation of consultation and to guarantee a successful decision process.
- Comprehensive research of the market is necessary in order to find specialized and experienced companies and to avoid problems with corrections and delays with respect to unusual work and innovative projects.
- Constant contact with PIP is a good means of support, especially in the case of unpredictable changes that have to be made to the project.
- A well prepared financial investment plan is required, especially with historic buildings.
- It is essential to be aware of the possibility that there will be a need to do additional work, both construction and project work (hidden construction work that was not taken into consideration at the time of preparing technical documentation).
- During the project design process and the analysis of RES implementation, it is important to consider the functionality of the building; for example, in a music school, noise-emitting RES cannot be used and in a historic building it is not allowed to install any outside RES solutions, with respect to the exterior of the building, apart from those which do not alter its appearance.
- During the planning of the construction work schedule it is necessary to adjust it to the special functionality of the educational building – such as coordinating internal work with the lesson timetable (in the case of limited usable area) or during holidays.

10.9 SEAP for Óbuda-Békásmegyer and Preparation of Scientific Outputs on National and European Levels – Budapest, Hungary.

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About the organisation

The world's oldest Institute of Technology, BME is one of the major universities in Hungary, offering services for more than twenty thousand students. Besides teaching, it is a vibrant research hub, its activities ranging from technological fields to economics, from urban studies to social sciences.

The Centre for Socio-Spatial Development Studies was founded to provide a framework for educational and research activities in the fields of social and urban studies. The members of the Centre are actively participating in various research and scientific activities for both academic and industrial projects.

Aims

The main goal of the activities of BME was to trigger the municipality's activity toward the sustainable use of energy through the implementation of Sustainable Energy Action Plans (SEAPs). The activities involved data collection, specification of organisational capacities as well as the preparation of material. The SEAP documentation was intended to be the final output of these activities.

Secondly, the scientific activities formed the focus for BME in assessing the possibilities of energy-efficient urban planning at a local level, considering both the national and European framework and collaborating with other members of the project and different sections of the university. This led to the creation of expertise and a knowledge base including documents such as the Manual, the Compendium and the Handbook, which constitute a central part of BME's work.

Approach and Measures

At the beginning the actual situation was mapped by collecting available information, defining missing data and depicting the decision-making chain. The local information database was strengthened by assessing the physical characteristics of the municipal building stock and organising forums for qualitative interviews with actors (such as representatives of condominiums, economic actors, leaders of municipal institutions, key actors of the municipality) to document their opinion and initiatives for energy-efficient urban development in their own institutions. The aim was to find ways to increase energy awareness and to propose widely accepted actions for energy-efficient urban development.

Budapest, 3rd District: Békásmegyer, Madzsar J utca.

A quantitative survey of 600 residents in the district was carried out to assess the patterns of residential energy use so that a comprehensive and profound picture of the situation and possible solutions could be obtained. The data was then used to gauge the possible reduction of energy use in the municipal building stock.

Subsequently additional data was accumulated in order to develop necessary material for the preparation of a SEAP.

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The activities also included propositions for improving the decision-making chain in the municipality and for involving various interested parties in decision-making through forms of participation. Furthermore, the data gathered during the qualitative and quantitative research phases was used to formulate well-founded and sound statements as to the characteristics and foreseeable reactions of residents to possible actions. During the project, members of BME participated in the Scientific Support Team and Policy Advisory Board, prepared numerous outputs in cooperation with other experts and organised the preparation of the Compendium.

List of Stakeholders

Mayor, deputy mayor, leader and staff of office of investment at the municipality (5 participants), leaders of municipal institutions (6 participants), Energy Club Civil Association, representatives of condominiums (12 participants), local economic actors (8 participants).

Target Groups

Civil societies were defined as the key actors. Each of them needed to be addressed with specific means of communication and a well-defined and simple message. The main target groups were local decision-makers, municipal officers, residents, actors of the local economy, the municipality of Budapest, investors, government and heads of local institutions (municipal, civil and private).

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Budapest, 3rd District: Békásmegyer, Füst M u 1.

Financial Instruments

The most common forms are the Local Energy Fund, European funds distributed through the government, the financial assets of the actors, and Urban Regeneration Funds for Budapest and the district. However, private and business funds have not yet been widely available for such use, although certain initiatives have been started.

It seems that the long run of payback, an uncertain economic future and the high level of interest rates prevent financial institutions from devising successful programmes – projects with more than six to ten years for return seem too long especially for residents and small enterprises. On the other hand, the analyses by BME proved that actors, both institutional and residential, tend to spend significantly more on other construction work but are willing to invest in energy-saving measures if it seems reasonable after having been informed about the issue.

Budapest, 3rd District, Óbuda, Szőlő utca; Village Block.

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Budapest, 3rd District: Óbuda, Vörösvári út 1.

Results

- A reliable energy database of municipal institutions and a possible ratio of energy reduction through smaller investments was created.
- Local interest and activities were increased by organising participatory events for stakeholders.
- The municipality introduced a new and continuous monitoring of energy use for its institutions.
- On behalf of the municipality realistic steps were taken towards energy-efficient urban planning and policy.
- The necessary institutional and financial conditions for the activities were clarified.
- The documentation was prepared for the Sustainable Energy Action Plan for the Óbuda-Békásmegyer Municipality (3rd district of Budapest).
- Patterns of residential and institutional energy use were analysed, suggesting possible ways of improving efficiency. The results were published in various forms (radio broadcasts, scientific essays, longer and shorter recommendations and outputs).

Specific Results to Impact at Urban Quarter Level

- A to-do list for municipal institution s was formulated, including the clarification of roles and activities for successful planning and implementing strategies.
- Available and trustworthy data, information and monitoring are of vital importance for local decision-makers for well-founded decisions.
- The project also led to large-scale raising of energy awareness (including measuring energy consumption).

Lessons Learned

At the beginning of the project the level of energy awareness was rather low. There were also organisational deficiencies and incomplete registrations and other data. Specifically, there were deficiencies in the communication between different bodies of the municipality and between the municipality and other organisations, which prevented the implementation of the policies.
Additionally the lack of existing data and analyses also contributes to the low level of efficiency.
On the other hand, after an initial period, latent and growing interest in the project of energy efficiency could be found, especially among the more informed public. But there is a general lack of proper resources and knowledge of available resources and therefore the dissemination of knowledge and expertise is an important aspect.

Successful and stable long-term projects need constant political backing; thus persuading the decision-makers is a key issue.

The intense fluctuation within the expert staff of the municipality presents a significant problem: dedicated staff is of key importance for successful planning and implementation of energy efficiency projects – and it pays back if well and carefully planned.

10.10 Best methods for profitable practice – Budapest, Hungary.

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Redesign public space in Budapest.

Starting Point

When the EnSURE project started, energy-efficient urban planning was considered an abstract concept, without real content in the practice of Hungarian cities. There were several professionals doing outstanding work on the level of national energy policy and promising results were produced through projects and investments.

On the other hand, the tasks of municipalities and their tools in the field of energy efficiency were not well-known. Thus Hungarian municipalities hardly took any steps towards a better city climate and more efficient energy management.

Installation of solar panels.

© MUT

Main Objectives

By participating in the EnSURE project, the aim of the MUT was to contribute to the development of a practice-oriented knowledge pool by becoming familiar with international practices and further developing Hungarian strategies.

The aim of the aforementioned knowledge pool is to assist European and Hungarian municipalities in developing their own energy-efficient urban planning solutions, contributing to the sustainable development of their environment and economy.

According to its profile, the organisation's primary aim was not to facilitate actual investments but to ensure a practice-oriented methodological background, which is why it found its place in the EnSURE project. The MUT participated in the entire process of the project, contributed to the preparation of several documents and took part in the work of the scientific support team. It had an important role in preparing the methodological background and the writing of certain chapters of the Compendium, the Basic Knowledge Handbook, case studies, the participatory strategy and the joint transnational energy concept on a district level.

The dissemination of knowledge is essential; therefore the MUT played an active role in organising the related workshops, conferences, training sessions, exhibitions and events.

The final part of this work was writing the policy recommendations and editing the content of the manual for energy efficient urban development. The result can be found in this publication. The MUT's work does not cease with the project, as disseminating experience and knowledge in order to develop energy-efficient Hungarian cities remains a key task for the organisation.

Approach and Measures

The manual's structure and the policy recommendations reflect MUT's role in energy-efficient urban planning.

- The policy recommendations summarize the most important tasks of energy-efficient urban planning on the level of the European Union, regional governance and national municipalities.

- The manual informs readers on the most important actors in energy-efficient planning, the steps of successful planning and its methodology and criteria through a coherent system of sub-fields. It lays down objectives related to the structure and content of strategic plans. It explains important points of view on central topics such as an integrated approach, the adequate preparation of decision-making processes or communication, and targeting widespread participation.

- The manual provides detailed guidance concerning the main element of efficient urban planning, namely

Results

As a result of practice-oriented professional work and widespread communication more and more Hungarian municipalities are recognizing the importance of energy-efficient urban planning. For example, the Hungarian signatories of Covenant of Mayors have increased by 25% and the number of SEAPs have tripled. Since 2012, the MUT has filled the role of the national expert of the Covenant of Mayors.

Lessons Learned

MUT experts have several decades of experience in the field of strategic settlement planning. The experiences of the EnSURE project drew attention to the importance of financial and economic strategies for urban planning.

Raising the interest of a wide circle of actors is only possible if financial benefits are clearly communicated. The methods of energy-efficient urban planning, developed with international partners, produced better results and expertise than research on a mere national level, which shows that the successful functioning of public institutions is only possible through cooperation on different levels.

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10.11 Baukultur – a Principle of Solidarity: Sustainable Energy-Efficient Urban Development. From Local Experience to Good Practice, Germany.

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Bogenallee Living+ blauraum, Hamburg.

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© Osterwold°Schmidt Architekten BDA, Weimar

Courtyard Schottenhöfe Erfurt, Osterwold°Schmidt Architekten BDA, Weimar.

About the Organization

Together with the Federal Foundation for „Baukultur", the Foerderverein Bundesstiftung Baukultur e.V. (FV Baukultur) stimulates a nationwide debate on the quality of our built environment. As part of an interdisciplinary approach, they address actors in the planning and building sectors as well as the general public.

Their work aims to raise awareness of the value and potential of the built environment, disseminate knowledge, promote exchange and encourage active involvement for improving the quality of the built environment – improving Baukultur.

Aims

The FV Baukultur's focus is on highlighting the interrelation between energy-efficient urban development and the overall quality and value of our built environment. Within the EnSURE project, the activities of the FV Baukultur strengthen the interdisciplinary exchange of knowledge and experiences, allowing closer contacts to be established between relevant stakeholders and organisations.

The FV Baukultur sets out to identify best practice projects and initiatives in order to disseminate knowledge and to engage with the project partners in a debate on how to ensure a sustainable, high-quality built environment. A collection of joint recommendations and project partners' findings will be published in an online magazine and launched at the end of the EnSURE project in summer 2013. In the course of the project, the FV Baukultur will engage in a sustained dialogue that will be maintained beyond the project time frame.

"The built environment is the framework for all human activity and interaction, it is all pervasive, we give it form and it forms us."

Built Environment Education Guidelines (BEE) of the International Union of Architects (UIA), 2002.

Approach and Measures

- Comprehensive research: in-house, attendance at conferences related to the scope of EnSURE, face-to-face consultation, organisation of exposure visits to model regions/projects etc.
- Engagement with the local actions and concerns of the EnSURE project partners and other relevant actors. Compilation of project partners findings.
- Elaboration of joint recommendations on how to ensure a sustainable high-quality built environment.
- Identification of the relevant stakeholders and the target audience and their differing perspectives.
- Establishment of a working group "REKort" (consisting of experts with different professional backgrounds) to exchange knowledge and receive input on issues relevant to the EnSURE project (e.g. development of innovative financial schemes).
- Coordination of transnational training courses in spring 2012, serving to disseminate information on the EnSURE project and project partners' local actions, to present and discuss best practices, receive external input and stimulate exchange of knowledge and experiences.

List of Stakeholder and Target Groups

The FV Baukultur, a non-profit membership organisation, sustains a nationwide network consisting of stakeholders involving professional associations, public authorities, initiatives and organisations, experts and planners in the planning and building sectors as well as citizens.
By launching network initiatives and projects, the FV Baukultur invites and enables the members of its interdisciplinary network to share ideas and knowledge and to engage in debates – both online and face to face:

- Planners/professionals in the planning and building sectors and their relevant associations (Chamber of Architects etc.),
- Actors from local authorities and actors at regional and national levels,
- Housing associations,
- Tenants, private clients and their relevant associations,
- Entrepreneurs in the planning and building sectors (manufacturers and producers, building and construction companies),
- Scientific experts from universities and research centres,
- Students of relevant disciplines,
- Organisations, initiatives and lobby groups at local/regional/national levels,
- Media.

energy+Home, Mühlheim, TSB Tichelmann & Barillas Ingenieure, Darmstadt.

© TSB Tichelmann & Barillas Ingenieure, Darmstadt

Lausitztower, Rehabilitation 2003/2007, Hoyerswerda, Muck Petzet Architekten BDA, Munich.

© Muck & Petzet Architekten BDA

© Anna Mieves

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„Trial-Living Wilhelmsburg" a project of the artist Christian Hasucha, International building exhibition Hamburg 2013.

Results and Lessons Learned

Ensuring high quality outcomes and sustainability: Developing high-quality sustainable urban quarters demands an integrated perspective that looks beyond energy efficiency.

Applying an integrated perspective: When planning and assessing energy efficiency measures, various factors and criteria (environmental, ecological, economic, social, cultural etc.) need to be considered. This includes the consideration of the status quo as well as future developments with the aim of promoting coordinated action and a sensitive selection of measures. Individual buildings, locations and situations require individual solutions. At the same time, there is a need to ensure that concepts for the rehabilitation of buildings are embedded in an overall strategy for urban quarter development, i.e. integrated rehabilitation/neighbourhood concepts at an urban level. Solutions must fit in with the appearance of the building, city and landscape.
Conducting an analysis of the potential and needs at regional, urban quarter and building levels is a precondition for developing optimal solutions and choosing appropriate measures. Coordinated action and integrated planning is therefore needed. Joint efforts will result in mutual benefits.

The consideration of the entire urban quarter offers scope for concepts of solidarity: the coordinated use of regenerative energy technologies, the systematic development of energy supply systems, the sensitive rehabilitation of buildings of special architectural interest whose higher energy consumption is balanced by savings of neighboured high energy-efficient buildings.

Striving for resource-saving architecture and life-cycle-based civil engineering: The selection of rehabilitation measures is often based on estimates and prognostic data, such as potential energy savings.

Monitoring and evaluation are needed to generate reliable data for assessing the true effectiveness of a particular practice. Moreover, a greater use of life-cycle (grey-energy) considerations of a product and/or building is necessary (encompassing production, use and maintenance and recycling). Focus should be on exploiting natural rather than further technical solutions. Planners are the experts to combine energy efficiency and technical know-how with good architecture and design.

Fostering development and high quality consultation: In view of the complexity of sustainable urban development and building rehabilitation, it is important to promote experiments, research and pilot projects that contribute to the development and improvement of (new) techniques, materials and processes. Access to high-quality consultation to ensure the development of an optimal rehabilitation concept should be guaranteed.

This could be achieved by providing funding for the elaboration of integrated rehabilitation/neighbourhood concepts at an urban level involving the employment of an energy manager who supervises and coordinates the implementation of the rehabilitation measures.

Providing experience and knowledge exchange, adequate training and education opportunities (e.g. for energy consultants) could motivate people to take action and contribute to improving practices.

A sustainable built environment offers chances for the social and economic present and future of our countries. Any measure for energy efficient urban development needs to enhance the unique character of the built environment, enriching the everyday-quality of life. Baukultur means creating sustainable urban quarters, considering various factors and multiple interests in a balanced way.

Visualisation, Project SoLi-Solare Lichtwiese, TU Darmstadt, Energyefficient Building Design Unit, Prof. Manfred Hegger.

© TU Darmstadt, Energyefficient Building Design Unit

Solar-roof opusHouse, Darmstadt, OPUS Architekten BDA, Darmstadt.

© Eibe Sönnecken

10.12 Participatory approaches for energy transition – Mestrino, Italy.

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Padua Trasnational Training participation laboratory 2.

About the Organization

Agenda 21 Consulting Ltd is a company established in 1998 that develops research activities and consultancy services. Its main office is located in Padova in the northeast of Italy, with a subsidiary in Torcegno in the Autonomous Province of Trento. Agenda 21 Consulting consists of an interdisciplinary team made up of ten members. Agenda 21 Consulting is organized into five main sectors:

1. Sustainable cities (with a particular focus on transport, energy and tourism issues),
2. Natural resources, protected natural areas and sustainable management, EIA and SEA, ecological footprint,
3. Decentralised cooperation, participatory research and decision making (i.e. Local Agenda 21)
4. Environmental communication, training and multimedia production,
5. European project area.

Aims

The project aims to publish a Basic Knowledge Handbook and a pocket version as a tool for communication, awareness rising and participation. Agenda 21 was responsible for establishing a network of seven energy efficiency Info Points. All existing and new Info Points (established during the project runtime) were interlinked into a high-performance network. The main aim was to disseminate expertise for the better use of renewable energies, energetic rehabilitation of buildings and financial instruments available through both local experiences and the EnSURE website platform.

Agenda 21 edited a transnational participatory strategy in cooperation with all the partners. The partnership was a successful means of adapting a local strategy by a circular process: (1) starting from the local level; (2) sharing common elements for a transnational approach; (3) returning to the local level. The transnational participatory strategy is a continuous cyclical process consisting of a methodological section and some case studies taken from the project's activities.

The joint transnational energy concept at a district level was edited as a guide both for EnSURE's partners and all local public administrations that wish to manage energy issues in an integrated and transnational process.

GeoOikos exhibition, info desk.

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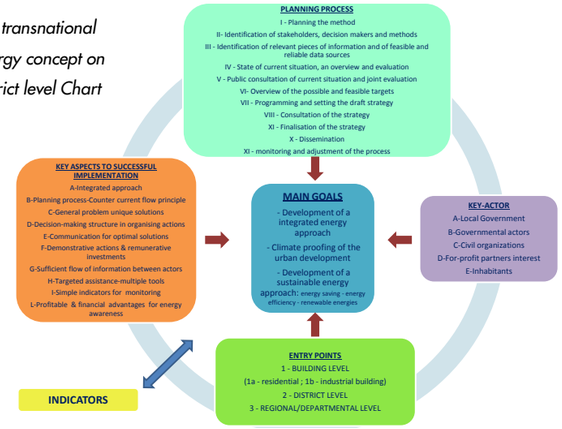
Padua Trasnational Training Conference.

The transnational energy concept on district level Chart



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The concept gives guidance on how to deal with climate change in urban planning practice and on many related aspects, such as the infrastructural and technical framework, social aspects regarding the needs of the citizens, participation aspects (such as involvement of the local stakeholders).

The transnational meeting at Padua examined the issue of transition to a sustainable use of energy resources at different levels from the individual building to a regional level. The topics presented a comprehensive picture of different aspects of the Italian and European reality.

A laboratory especially designed for participatory methods for stakeholder involvement in the energy issue was proposed. The laboratory allowed participants to familiarize themselves with some participatory methodologies such as "Open Space" and "World Cafe", aimed at implementing measures for a sustainable use of energy resources.

Approach and measures

1. Development of a joint transnational energy concept at a district level.

2. Study sections of the concept:
   I – Planning process: the process of the concept step by step; II – Key actors in energy-efficient urban development; III – Key aspects of successful implementation; IV – Entry point: Themes and topics related to the concept.

3. The concept applies an integrated approach to differing sectors with a high degree of transferability for many Central European cities. It is action-oriented and process-focused and implements an energy hierarchy (energy saving measures, increasing energy efficiency, the production and use of renewable energies). This approach starts from the entry point: looking for the right moment to involve someone in starting an energy project

Target Groups

- Municipalities,
- Provinces,
- Regions,
- Study and research institutes/universities,
- Local associations,
- Consortia/Foundations,
- Development agencies,
- Energy agencies,
- Technical enterprises, architects, etc.,
- Property owners,
- Banks.

Main strategy of the participation process

- Raising awareness of the need for integrated strategies for information, communication and participation,
- Online participation shows large potential for development and for integrating face-to-face participation in a constructive manner,
- Networking is the right way to save energy by avoiding fragmentation and competing initiatives,
- Transparency, accountability and participation are three core aspects.

Results

The realised EnSURE's energy papers and tools support local stakeholders and policy makers to improve the analysis and to suggest some innovative challenges for managing the urban efficiency energy's actions at different scale of interest: from building, to district and moreover regional scale. The joint transnational energy concept and the transnational participatory strategy give an interesting opportunity to investigate and to apply some approach to the energy efficiency European transnational framework, taken into consideration the social, economical technical and institutional contests.

The Info Point output aims to give feedback on different partner initiatives and create an information and participation exchange area. It is intended to serve as an "energy help desk" where it is possible to share materials and involve other partners in one's own initiatives and events.

Padua Trasnational Training Conference.

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Lessons Learned

- During the project life, visits to EnSURE's partners and the sharing of experiences of vital importance in developing a transnational strategy and in adapting local strategy by a circular process: (1) starting from the local level; (2) sharing common elements for a transnational approach; (3) returning to the local level.
- A key challenge in managing the participatory process is visibility and coordination. By means of the Info Point it is possible to demonstrate a series of activities related to information, awareness-raising and participation.
- The transnational concept is not a blueprint to be implemented at the local level, but is a shared construct tested in different contexts of Central Europe: a combination of local and European visions suitable for the future challenges of participatory energy transition.

Padua Trasnational Training participation laboratory.

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10.13 Financial aspects and innovative financial instrument for a Urban Energy efficient rehabilitation – Stakeholder involvement and implementation methods – Milan, Italy.

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About the Organization

Finlombarda S.p.A. is a public capital company that is 100 per cent owned by the Lombardy region. The company's mission is to promote the development of the regional economy and provide consultancy services, primarily for the regional government, through the promotion of innovative financial solutions to attract private capital for the financing of publicly sponsored development projects through Public-Private Partnership (PPP).

More specifically, the mission of Finlombarda is focused on:

1) The management of dedicated regional and EU funds,
2) The promotion of PPP,
3) Consultancy services aimed at the regional administration such as financial advisory and management services, legal assistance, programme planning and implementation, project development and relationships with the financial community.

Aims

EnSURE strives to develop strategies for the energetic rehabilitation of the building stock and energy efficiency in urban development. The main objective of the EnSURE project is to define innovative and practical financial instruments. For this reason the analysis is based on existing financial schemes, i.e. on financial tools that have already been proven and tested.

Approach and Measures

The Lombardy region intends to carry out development programmes in the field of renewable energy and energy efficiency in line with EU targets by 2020. Therefore, Finlombarda, participating in the EnSURE project, wishes to consolidate its expertise on legislation, policies and financial instruments in force in EU countries and provide innovative solutions consistent with European trends to the Lombardy region.

Role of Finlombarda

The role of Finlombarda in the project is to analyse and promote financial mechanisms to stimulate economic growth and attract new investments in the fields of energy efficiency (EE) and renewable energy sources (RES) for efficient urban redevelopment.

List of Stakeholders

About 60 Stakeholders have been involved to evaluate the collected financial practices through the compilation of a questionnaire as a means of identifying best financial practices. In a second step the possibilities for the improvement of financial practices were identified. 196 questionnaires were returned, of which 128 were filled in by project stakeholders and 68 by project partners.

Target Groups

Stakeholders included:

- Governmental bodies at local, regional or national levels,
- Universities and public research centres,
- Public authorities,
- Consortia of citizens and local communities,
- Banks and financial institutes,
- Agencies for the development of local territory and authorities/agencies for the promotion of renewable energy sources,
- Companies and industrial associations.

Results

The activity of Finlombarda was structured in five basic steps:

1. Elaboration and collection of current practices for financing energy-efficient urban redevelopment, refurbishment and renewable energies,
2. Categorisation of practices and definition of key stakeholders,
3. Evaluation of practices,
4. Selection of best practices,
5. Identification of actions for the improvement of selected best practices and thus for the elaboration of innovative and advanced financial tools.

Within the overall framework of the EnSURE project, WP4 specifically aimed at elaborating innovative financing instruments in the categories of:

- Financial schemes
- Climate energy funds
- Energy performance contracting models

The main objective was to develop new and practical financial instruments. Therefore, existing financial schemes were collected and analysed. Additionally, best practices were selected and discussed in order to be able to propose both incremental and radical changes which could contribute to developing new and innovative financial tools.

Specific Results to Impact at the Urban Quarter Level

Starting with the analysis of 28 financial practices. Six best practices were selected and discussed and the most appropriate actions for their improvement were identified. This process resulted in the identification of the following advanced financial tools:

- Advanced Urban Energy Efficiency rehabilitation,
- Advanced Energy Efficiency Credits,
- Advanced Intelligent Condominium,
- Advanced Subsidy from the National Fund for Environmental Protection and Water Management,
- Advanced ESCo Standard Contract,
- Advanced ESCo Energy Performance Contract.

Lessons Learned

Thanks to the EnSURE Project, Finlombarda had the opportunity to develop and participate in a transnational learning process and an integrated approach in the fields of energy-efficient urban redevelopment and renewable energies. Financial practices at different geographical levels (local, regional, national and EU) and different countries were analysed. Starting with the identification of existing differences between the approaches of all the project partners, we published transnational guidelines for the improvement of actions to promote energy efficiency and renewable energy sources for urban rehabilitation.

ANNEX:
Core Outputs of the EnSURE project

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The EnSURE project partnership has produced several local and joint developed transnational outputs. EnSURE provides practical guidelines to encourage municipalities, housing companies, owners and other stakeholders to realise energy-efficient rehabilitation and to renew energy supply systems. It also shows how to finance such activities and promote energy-efficient urban development in politics. The results have been included in the present manual of energy-efficient urban development.

Concepts for Energy-efficient Urban Development

Compendium on National Framework Conditions
The Compendium on National Framework Conditions is a basic document which provides principle background data and experiences on the participating partner countries. In order to understand and learn from the different initial situations of the partners, it analyses three topics related to an energy-efficient urban development: a) Urban planning principles and institutional aspects, b) Energy efficiency standards and use of renewable energy, c) Financing instruments available at regional, national and EU level. Guided by Budapest University of Technology and Economics.

Sustainable Energy Action Plans
Several partner joined the Covenant of Mayors and established SEAPs according to the Covenants definition.

Transnational Energy-efficient Urban Development Concept
The integrated concept gives guidance for the local implementation of a energy-efficient urban development process, focussing on key aspects to successful implementation including topics as the participation of local key actors, the infrastructural and technical framework and tools and indicators for monitoring and evaluating the energy strategy and the development process. Another important aspect which is highlighted are the reasons for starting energy related activities on institutional, but also on personal level.

Stakeholder Involvement and Implementation Methods

Network of Energy Efficiency Info Points
Existent info points and new ones were created within the project interlinked to a highly performing network disseminating know-how on the better use of renewable energies and the rehabilitation of buildings. Coordinated by Agenda 21 Consulting ltd. The Network of energy efficiency info points is an important tool for the dissemination of the EnSURE project results, awareness-rising and knowledge transfer to a broad public. Its target groups are: citizens, property owners, investors, but also politicians and representatives of administrations and associations. The network is mainly focused on communication, public relations and information at local level it will also give feed-back on different partner initiatives. As an „electronic square", the role of each info point is to combine face to face with the electronic communication.

As a „square of fair" another task is to support the dissemination of experiences and to interlink individual projects within the region starting from a local network. It is important to help the regional networking of successful stories from for neighbor to neighbor to city to city. The idea is to start from the closest and practical successful examples and to move to a more general strategic change at city and region level. In the view of a new governance approach the info point may become a "civic square", a civic meeting point among social actors and local administration, where citizens discuss about changes toward sustainability.

Transnational contracting model
Definition of key elements for a transnational contracting model on the basis on the individual analysis of the project partners. To be applied at local level by the partners after the project runtime.

Guideline of innovative financial schemes
Guideline with recommendations for innovative financial schemes based on the analysis and the experience during the project implementation. Provided by Finlombarda.

Transnational climate energy funds model
Definition of key features for the design of local/ regional energy plans to finance the enhancement of alternative energy use, definition of specific Climate Energy Funds (CEF) with ethical criteria.

Test and Evaluation of Specific Elements for Energy-efficient Urban Development

„energy SMART building" (List of criteria and guideline for an „energy SMART building")
Joint definition of criteria for an „energy SMART building": Joint constitution of a framework for the energetic rehabilitation of pilot projects on the basis of the action plans.

SEELA evaluation tool and report on all pilot projects
Social, environmental, energy, economic, landscape assessment (SEELA) for all pilot projects. Each project partner provided a report on the implemented pilot project. The joint evaluation was coordinated by the scientific support team.

Communication, Knowledge Management and Dissemination

Common Policy Paper on Energy-efficient Urban Development
Giving political and action recommendations promoting energy-efficient urban development, designated to decision-makers from local to EU level, guided by the Policy Advisory Board.

Poster exhibition on best practice
Visualising the results of the overall project and local pilot projects. The posters will be used for local and transnational exhibitions to support the awareness raising process.

Brochure energetic rehabilitation and the built environment
Federal Foundation for Baukultur represented by Förderverein Bundesstiftung Baukultur e.V. elaborate a brochure on the interactions and interdependencies of energetic rehabilitation and the built environment.

Basic Knowledge Handbook
Containing relevant information: Project partner's experience, external institutions to provide profound information, overview on relevant publications/ documents, summary of the lessons learnt from relevant INTERREG projects, provided by Agenda 21 Consulting ltd.

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